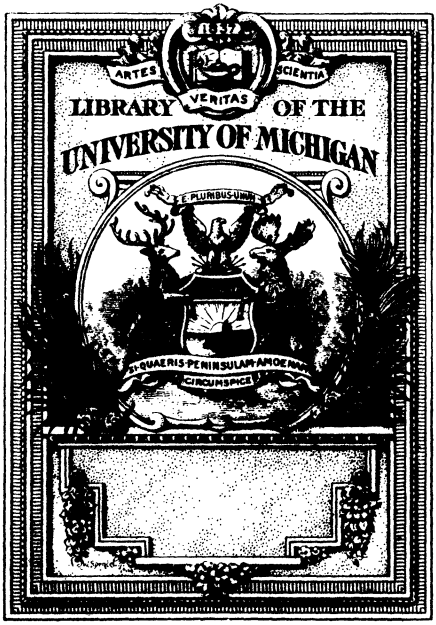
PHILOSOPHY OF VOICE

LUNN

SIXTH EDITION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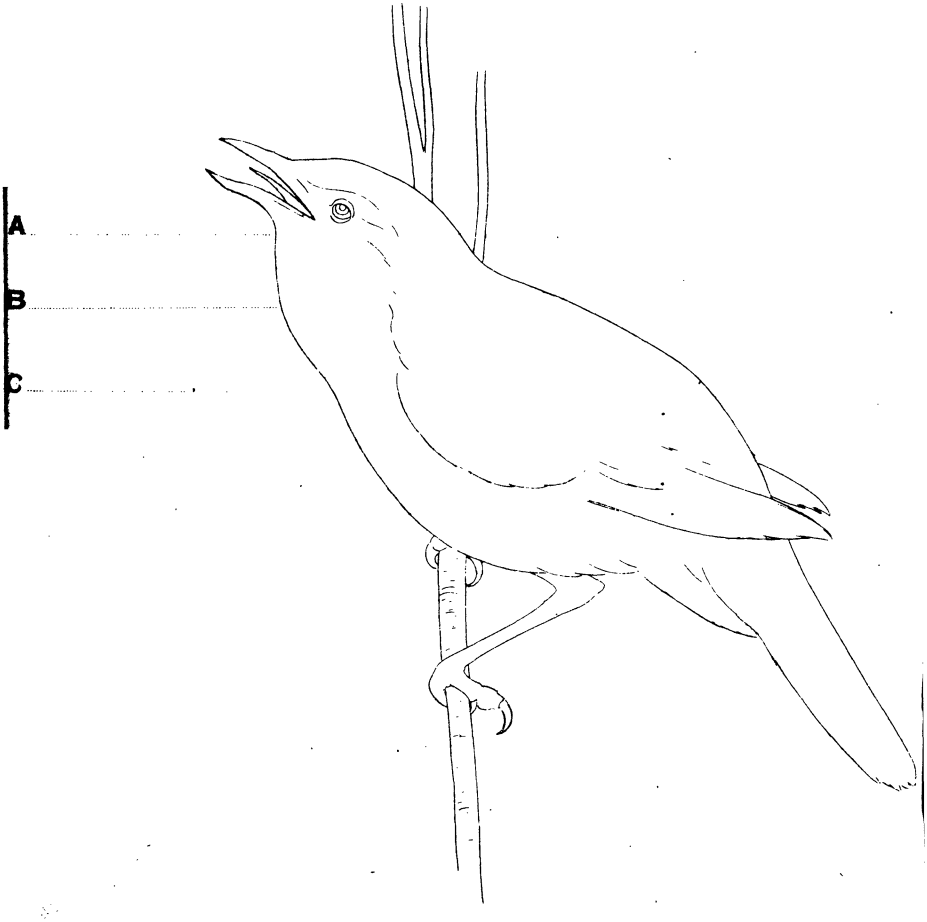
THE PHILOSOPHY OF VOICE.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THE

PHILOSOPHY OF VOICE:

SHOWING

THE RIGHT AND WRONG ACTION OF VOICE IN SPEECH AND SONG,

WITH LAWS FOR SELF-CULTURE.

By CHARLES LUNN,

AUTHOR OF "VOX POPULI" AND "ARTISTIC VOICE" (DEDICATED, BY SPECIAL PERMISSION, TO MESSRS. SIMS REEVES, SANTLEY, AND MAAS).

"Get your voice disciplined and clear, and think only of accuracy, never of effect or expression: . . . . most likely there are very few feelings in you at present needing any particular expression; and the one thing you have to do is to make a clear-voiced little instrument of yourself, which other people can entirely depend upon for the note wanted."—RUSKIN.

"No voice exempt, no voice but well could join melodious part."—MILTON.

"New-fangled theories have not as yet improved upon, and are not likely to improve upon, good old-fashioned practice."—*The Times.*

SIXTH EDITION, ENLARGED.

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1888.

PREFACE TO FIFTH EDITION.

THE exceptional success of this little work has induced me to revise it, and add much entirely new matter, unattainable from other sources, to the educational part, in order that it may be an authoritative text-book in the hands of both master and pupil, and of clear direction to those who cannot obtain private tuition. This is the only work on voice based upon the relationship of mind to body, and results founded on this relationship are reached in far less time, and consequently at far less cost, than by the usual unphilosophical methods. At the time these papers were written no attempt had been made to explain the difference of internal form between the voice organs when producing musical and when producing unmusical tones. Many works have since appeared, but to an expert they bear internal evidence of coming from the hands of those who have never learned to sing. I have given two sketches, one showing the voice organs as warped by association with twenty or more years of spoken words, the

other showing the internal form as restored to its normal balance by rightly directed work.

I have gone for analogy to the song-birds, for these are constant living examples of right voice-production as contrasted with human error.

One of the greatest, if not the greatest, of the few representatives then left of the old school (Signor Cattaneo, Bosio's master) was my trainer. Finding his teaching opposed to most modern views, I felt it my duty to give up a promising public career for the sake, if possible, of rescuing from complete loss the traditions consigned to my care. Here is independent testimony of his school:

Quality.—"Mr. Lunn sang with a sweetness and tone forcibly reminding the hearer of Giuglini."—*Worcester Herald,* 1864.

Compass.—"Mr. Lunn's voice is of wonderful compass (three octaves all but one note), and remarkable power, and he knows well how to use it."—*Birmingham Gazette,* April, 1864.

Style.—"The most noticeable point (of Beethoven's 'Engedi') was the tenor-singing of Mr. Lunn, who that evening made his *début* before a Cheltenham audience, and who promises to take a high position in public favour."—*Musical Times,* 1866.

Thus much for art qualifications; as regards science, the whole principle of the natural physics

of voice must have been revealed to me when a boy of fifteen studying ornithology in its best school—the school of Nature. But when I obtained a copy of Dr. Wyllie's researches on the detached larynx (1867), I saw he came so near the truth that I thought it would be a grateful recognition for the kindness shown me by the proprietors and editors of the *Medical Press and Circular* to ascribe to a member of the medical profession a discovery I could claim as my own.

I have retained my condemnation of Madame Seiler because her work attained an extrinsic importance owing to the great physicist Prof. Helmholtz supporting it. Strangely enough, she mistook the sound of a French word, *coup* (koo), for what it only symbolizes. On the other hand, to show Prof. Helmholtz he would be better employed in strengthening his own position than in weakening mine, I ventured to discover (1875) and proclaim his error respecting the "physical basis of hearing"—an error accepted by the scientists of that day. I knew birds hear with greater subtlety and precision than we do, and this without training, yet they have no "fibres of Corti." Papers have said, "Show us results."* But this is not my business; in my semi-

* I believe I am right in stating that I am the only professional trainer in Great Britain that annually sustains a concert solely by pupils, in the principal hall of his native city.

private provincial life my work is but rudimentary, or with amateurs, or with cases of malformation. Results on these platforms, are to be found by those who want them, not only in England but also abroad.

The frontispiece is merely outlined, as Mr. Ruskin suggested to me, but, I fear, it realizes his prediction; however, it serves its purpose, and, I contend, proves my point.

CHARLES LUNN.

EDGBASTON, *June*, 1886.

TO

THE MEMBERS OF THE MEDICAL PROFESSION,

A PROFESSION IN WHICH SELF-ABNEGATION AND SCIENTIFIC RESEARCH HAVE EVER REIGNED SUPREME,

This Essay,

WITH EVERY FEELING OF ADMIRATION, IS RESPECTFULLY DEDICATED.

PREFACE TO THE SIXTH EDITION.

FIVE-AND-TWENTY years ago I said I would restore the old Italian school of voice-training, and prove its truth by scientific research and discovery. I have done it.* My tried qualifications are better stated in the words of others than in mine own:

"It has pleased and interested me very much."—SIR MICHAEL COSTA (on a previous edition).

"I am much interested in what you say as to the question of condensed air."—GRAHAM BELL (the inventor of the telephone).

"I shall look for your book with great interest."—JOHN RUSKIN.

"Full of useful practical suggestions."—MAX MÜLLER.

"It is a simple fact—I should have completely stopped nine or ten years ago but for your teachings. In four short lessons, if I did not fall entirely into your groove, I recovered my lost ground; and now in my sixty-second year, I am singing about as well as ever—if ever well—and, well or ill, obtaining the testimonies of my friends that, like Phyllis, I 'never fail to please.'"—C. M. INGLEBY, Esq., LL.D.

* See Appendix.

"I have no hesitation in saying that the principles on which the work is based seem consistent with all the presumptions to which a *sound* thinker on those subjects would be led."—PROFESSOR BLACKIE.

"I am of opinion that your methods of voice-culture are practically superior to any others I am acquainted with."—DR. GORDON HOLMES.

"I have come to give what support I can to a man whom I look upon as a worthy representative of what I believe not only to be the best, but the only, method of training the singing voice. That is to say, he teaches principles, drawn from the practice of great artists, who have had handed down to them the tradition which made Italy what it formerly was, at once the cradle and the nurse of the divine art of song."—(London Lecture, May 4, 1887) SIR MORELL MACKENZIE.

"I doubt if I ever should have understood the voice as I do now had I not read your works. I want to thank you for writing them."—EDMUND MYER (leading teacher in New York).

"At a recent lecture at the Metropolitan Opera House in this city (New York), Mr. Tomlins, of Chicago, explained his theory and referred to you as the voice authority from whom he obtained his ideas. Our best teachers are coming round to your views."—EDGAR WERNER, editor of the *Voice*, New York.

"I trust you will yet realize the undivided attention and support of the thinking public in your

efforts to show them the true way, and thus reap the reward your long and valuable services should command."—WARREN DAVENPORT, teacher, Boston, U.S.

"Mr. Lunn, by his searching, sifting, and logical mind, has gone more deeply than many of his fellows into an almost fathomless subject."—The *Voice*, June, 1887.

CHARLES LUNN.

EDGBASTON, *February*, 1888.

THE PHILOSOPHY OF VOICE.

INTRODUCTION.

THE VOICE ORGANS OF BIRDS.

THE superior larynx (A, *frontispiece*) of birds is situated at the base of the tongue, and its function is to rule, measure, or suspend the escaping breath, whether voiced or unvoiced; it answers to the false cords in man (p. 16). The superior larynx (A) of these perfect voice-producers has solely to do with the natural physics of voice, while the inferior larynx (C), which is pushed down into the chest, has solely the musical part, not the resisting part, of the work. The corresponding part to C in man is the true cords (p. 16). The space (B) between A and C in birds is seen to swell in response to the power of voice: this is owing to varying degrees of compression of the air, and it shows by its bulge the backward push in true voice production; its corresponding part in man is the ventricles (p. 16). Dr. Lardner nearly got the truth when he wrote, "The drum itself is the organ by which the intensity of the sound is increased, and is analogous to the laryngeal ventricles

of mammifers" ("Animal Physics," vol. ii., p. 623). The sketch given as frontispiece is taken from Gould's drawing of the sedge-warbler; it is a polyglot, so is typical of the species. The greater volume and intensity found in the voice of a bird in comparison with that of a man, taking respective sizes into consideration, is probably owing to the greater proportional space between the top part of the instrument and the lower part. It is a self-acting instrument, obedient within its limitations to the will.

A thrush perched at the top of an ash-tree in my garden begins pouring out its full ecstasy of song at daybreak, and, with slight intervals for refreshment, ends at sunset. This will go on for two months or so, without the slightest appearance of fatigue or the slightest sign of loss of tone in voice.

This is the mode of voice-production that in the following treatise I have endeavoured to induce in human beings, and define its cause.

PART I.

EDUCATIONAL.

ONENESS of being is a necessary property of a living body, and in order for the will to operate there is required an external unity of the parts, of the members one with another, and of all with their common head; if their external unity is interrupted the intrinsic principle of oneness is gone, and the power of self-manifestation contracted or destroyed. In learning to play upon instruments external to man the eye considerably assists the mind, but in learning to play upon our own instrument we are learning to act through an invisible instrument, that is a part of ourselves.

The chief characteristics of the old Italian school were ease, power, volume, and endurance: four characteristics shown now as ever by our song-birds, and we, like them, have to obtain effortless, full, sustained, and beautiful tone if we wish to sing well. In order to this we must have our bodies right, and our minds must perceive Where to Will, How to Will, and What to Will. A pianist cannot strengthen his third finger by using the fourth; and in like manner a student of song cannot strengthen his

voice by falsely placing or falsely directing his will To one student who fails through want of ability, thousands fail through want of clearness of direction. A student must always keep in mind what he wishes to attain; it is not *any* sound that will do, but only *beautiful* sound, and beautiful sound is the result of clearness, smoothness, volume, and intensity.

The old school was celebrated for these conditions, but specially for volume,* a property modern singers lack.

First Law.—Our first object is to tie the will to the instrument. Our next to dissociate the habits of connection that have grown up in our spoken words. As a pianist's hands have to be independent of each other but capable of simultaneous use, so a vocalist's voice and parts of speech have to be independent of each other. We play a sonata on the larynx and at the same time utter words.

Placing the Will.—In order to find out where the voice is made, let the reader place his finger on the Adam's apple or point in his throat, just about behind the collar. Read in whispered words part of a sentence slowly; then gradually, while reading, transfer the manner to words uttered aloud; then fall back again slowly to whispered words: he will feel the vibration of the vocal instrument underneath his finger-tip, and this will prevent him being misled by the terms "head" and "chest" voice. Next,

* The *Daily Telegraph*, writing on Alboni's appearance at Rossini's funeral, said: "The splendour of her massive voice was a revelation to many. The greatest voice that has been heard in our generation has lost nothing of its pristine luscious sweetness. The style, moreover, of the vocalist belongs to a former school, the secret of which seems to have been lost."

let the reader again put his finger on the same spot and swallow: the part will be felt to rise, and he cannot swallow without its rising. When that rises both the upper and lower parts (see sketch, p. 16) close, and they close in spite, not in consequence, of his will. Then we get this: under certain conditions *openness* is the law, while under certain other conditions *closure* is the law. This latter was the old school we are about to study and to prove.

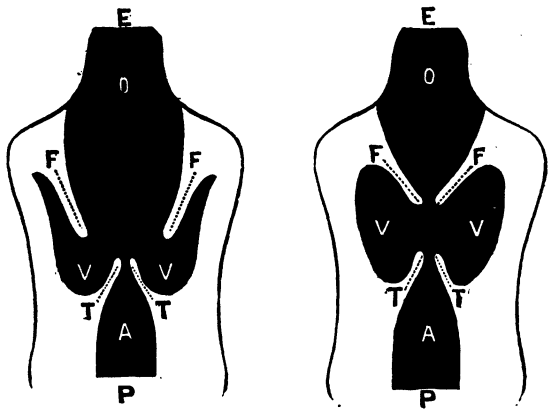
The importance of metaphysical training is easily shown. There are strong and healthy men who, in the prime of life, are said to have "lost their voice." Science has given no possible explanation of this. The fact is the singer has not lost his singing voice at all; he has only forgotten how he did it, so cannot recall it! He produced his voice originally aright *by accident;* from some cause or other, probably a slight cold, it became temporally disturbed, he tried a new way and it would not come, he forgot the first way, and so "lost his voice." With all the physical conditions as perfect as in the outset, he cannot sing —simply for want of knowledge!

As Signor Garcia is the only writer, with the exception of myself, who represents the old school, we will take his principles, as far as they go, and explain them. But first for definitions. The larynx is the name given to the case in which the whole instrument is enclosed, and it is the larynx which we feel to rise when swallowing. The "glottis" is the name given to the opening between the true vocal cords (p. 20).

"No person can ever be a skilful singer without

possessing the art of governing the respiration." This is a self-evident truth; it remained for science to show how this entire control is *lost*, on what material conditions *it depends*, and how it can be *regained*.

Below are given two illustrations, one showing the



Section of Voice Organs producing voice falsely, incapable of ruling the escaping air. Outlined from Dr. Gordon Holmes.

Section of Voice Organs producing voice artistically, *i.e.*, false cords approaching, ruling, and resisting the stream of air.

Black = Space.
White = Solids.

A—Angular approach from chest.
T—True vocal cords.
V—Ventricles or caverns.
F—False cords.
O—Outlet from below.
E—Epiglottis.

form of the voice organs after twenty years of neglect or imperfect use, the other showing the form of the parts in right relationship to each other for the production of beautiful unfelt sound. There are two

conditions for the conversion of one form into the other, one instantaneous (surgical), the other dependent upon practice (muscular growth). For example: An arm is either in its socket, or it is not; if it be not, no playing of the piano will put it right; but if it be in its socket, it may yet be a feeble arm. The setting of a dislocated arm is one thing, the development of its muscles is another. In like manner of the voice: the voice organs *must* be set right before we can rightly play upon them, but the development of their rightly used muscles is dependent upon time and work.

This is Garcia's rule for the first start in study: "Keep the tongue relaxed and motionless, avert the base of the pillars, and render the whole throat supple." (Better have said, "Breathe through the open mouth, but feel no parts.") "In this position breathe slowly and long. After being thus prepared, without stiffening either the larynx or any other part of the body, calmly and with ease attack the tones very nearly by a slight motion of the glottis on the vowel A, very clear; this motion of the glottis is to be prepared by closing it, which momentarily arrests and accumulates the air in this passage; then, as suddenly as the pulling of a trigger, it must be opened by a loud and vigorous shock, like the action of the lips energetically pronouncing the letter P." And he adds: "This first lesson should be insisted on, as it is the *basis* of all teaching. I again recommend the shock of the glottis as the *only* means of attaining the sounds purely and without bungling." Now this, small though it be, is the one important

principle of training that has been successful in results; by it great singers have been made; without it, many possessing all other requirements have failed, and it served its purpose before the introduction of the laryngoscope. We have to see what this "shock of the glottis" is; why it restores the instrument to its natural conditions for creating sound; and how Nature acts when rightly used.

Second Law.—Complete inflation: in other words, suck in as much air as can possibly be drawn in. Never mind about "pectoral," "abdominal," or "clavicular" breathing. Fluids press equally all ways, and what we have to do is to get as much air in as we possibly can. Perhaps this wants a little expansion. The following extract from Sir Morell Mackenzie's "Hygiene of the Vocal Organs," p. 71, third edition, will show how false modern teachers act: "The old Italian masters taught that in inspiration the anterior abdominal wall should be slightly *drawn in*, and this method was practised for more than a hundred and fifty years; but in 1855 Mandl opposed this mode of breathing, on anatomical grounds, maintaining that the descent of the diaphragm is facilitated by allowing the abdominal wall to be flaccid and to project forward in inspiration. In England the views of Mandl have been advocated by Messrs. Brown and Behnke, and I was myself inclined to accept these doctrines. I felt some misgivings, however, on the subject, more especially as Gottfried Weber, one of the most acute investigators who had studied the science of

singing, says that it is impossible to explain why it is so, but that undoubtedly the old Italian method is the best. In the early editions of this work I endeavoured to harmonize the conflicting views, but further investigation of the subject has convinced me that the old *maëstri* were right, and that in the abdominal cavity there is ample room for the slight descent of the diaphragm without any protrusion of its anterior walls. I hope to publish the results of my experiments and observations before long, but in the meantime, I may remark, that by the old Italian method complete control is obtained at the commencement of the act of expiration, and undue escape of air—*i.e*, waste of breath—is thus prevented. In other words, by the Italian system greater effect is produced with less expenditure of force." And this will show the method I learned from Cattaneo: "In order to inspire freely, hold the head straight, the shoulders thrown back without stiffness, and the chest open. *Raise* the chest by a slow and regular motion, and *draw in* the stomach. The moment that you commence executing these two motions the lungs will proceed to dilate themselves until they are filled with air." (Garcia on "Respiration.")

The modern pseudo-scientific method of teaching people to breathe never has produced, nor ever will produce, a compeer to the great old forgotten school of Italy. The moral is obvious: Before confiding in a teacher, make him display his own

voice, and judge by its beauty and his control of it whether he be or not a practical man.

Third Law.—Hold the breath. The object of this is to stay all movement. When we are first learning to do a thing we pause to take aim, for it is more difficult to hit a moving thing than it is to hit a stationary one. Garcia nearly had the explanation of true production when he used the word "accumulation," but the word "momentarily" spoilt it. When the air is only momentarily accumulated the instrument has slipped; the start is right, but the continuation of tone is wrong, owing to F F′ (p. 20) springing too widely open. In right production the compression of air can be continuous. This slipping of the higher part of the instrument is a common fault with beginners. Others, hearing the difference between the ring of the attack and the feebleness and deadness of the rest of the note, condemn unjustly the attack as unmusical, instead of condemning, as they should condemn, the continuation of the note for not being equal to its first start.

Fourth Law.—Squeeze this imprisoned breath as much as possible by a general contraction of all the chest muscles; this act compresses the air within us. Under this condition F F and T T (p. 20) are brought together. This imprisoned air, when so acted upon, inflates the caverns (V) that lie between the false and true cords. The air catching in these caverns presses up the larynx and tightly closes it. We have transferred from our minds to a quite natural physical law independent of mind, the power that shut

the door and imprisoned the air below. Our minds have to act downwards to *undo* the natural resistance. Why should we make voice a question of personal work, when the voice under certain physical conditions will act for us automatically? We have, then, to withdraw the pressure a little before we can allow any self-escape of air. The old school always studied for highest elevation of the larynx, inflated caverns, on which the massiveness or volume of voice chiefly depends, and mechanical closure. By way of illustration: If we hold our breath by closing the mouth and nose, and squeeze the imprisoned air, we feel the air forcing its way up the tubes that go to the ears, and we find the drums of the ears pressed against from the inside. This is exactly what the air does in the caverns (V, p 20) in right production, holding the instrument distended and tight like the inflated sails of a ship under pressure of wind. When the old masters advised students to "appoggiare la voce" (prop up the voice), they meant prop up the instrument that produces it.

Fifth Law.—The valvular action. By ceasing to will to hold, an explosion of the compressed air takes place. This explosion is nothing more nor less than the first cry as presented by infant life, and is practically the same as what was called "the shock of glottis;" it is an audible result arising from the false cords, in response to will, opening a little, and releasing compressed air imprisoned below them, which air, in its release explodes, the true cords springing of their own elasticity, and consequently automatically

giving off their intrinsic tone. Now either(1) the false cords may act in unison with the true, alternating, as in laughter, between approximation and disjunction, like scissors. Or (2) the false cords may part so widely that they are unable to rule the air—this is ordinary, or false production, the true cords vibrating *on* a column of uncompressed air, which they cannot completely restrain; in effect weak, dead, or rough sound. Or (3) the true cords may completely open, the false cords being partially approached, in which case the air is heard to escape in a controlled hiss. Or (4) the false cords alone may slightly separate, assuming a fixed position, restraining the escape of vocalized air, while the true cords of themselves, by their own elasticity, alternate between parallel lines and ovals. This last alternative is *true production.* This first step of voice restoration is only an application of the automatic action that takes place at birth, and an application of this can alone enable the speaker to utter loudly any word beginning with a vowel; it is a sharpening of the energy of the organs of voice, just as *b* is sharpened into *p* by the action of the lips.

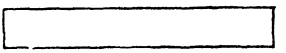
My dead pupil, M. Orlando Steed, and myself have been misrepresented as proclaiming a different action to that written of by Garcia, but it is not so: we only proclaimed a different explanation of the same act; but we showed the self-productiveness of voice in its first principle, which Garcia did not show. For example, if we pull a harp-string, the string in like manner pulls against us; there is a distinct act of will in us, but there is no sound in space. It is only when we *release* the string by *ceasing* to will

that the string of its *own nature* produces sound. The voice in man, properly set as in the bird, must produce itself; but being possessed by life within its limits, life informs it what to produce. By way of illustration, if we drive a thoroughbred horse our will is only used in *restraining* and *controlling* it, and we have only to decrease our will—or, in other words, remove our opposition to the nature of the horse—for the horse to increase its speed; on the other hand, if we have a broken-down hack, we increase the use of our will through whip or spur to increase speed. The latter illustrates false production and its fatigue; the former illustrates true production and its ease. Remembering this, one production is easily distinguished from the other by a student.

Sixth Law.—Equal power. Continuity of tone naturally results from retaining by an act of will the conditions assumed in the outset by Nature. There is to be noted a vital difference between training the voice and learning to play upon an artificial instrument. The voice-organs are part of our being; and if we possess control over any part of our being, Nature defines the limit, and our will regulates the degree. Variableness, then, is in response to *will*, the instrument being fixed; but in training to control an artificial instrument, we have to learn all the varying degrees of force that are required to produce varying degrees of sound. Moreover, in ruling an external inanimate instrument we will the process; but in ruling our bodies we will, not the process, but the end.*

* In experimenting upon deaf and dumb patients I have succeeded in getting the initial attack, but the voice sunk in pitch as breath-pressure decreased.

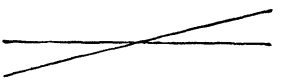
The old school used equal power to ensure no change of state in the relationship of the parts each to the other. The point for study is precisely the intensity of beautiful sound; so a beginner should sustain each note in a perfectly equal power; thus:



not thus:

The *crescendo* and *diminuendo* are innovations of modern trainers.

To prove the subordination of the instrument to the Will, notes can be tested thus:



Seventh Law.—Full power. Muscles used are strengthened; muscles disused are weakened; muscles abused suffer from the ill-treatment. The old school studied at *full* power to strengthen enfeebled muscles, and to inform the perception of the student the limit up to which his will could secure vocal response. A piano-tuner in tuning a piano always strikes the notes as hard as possible in order to set them, and if this were not done the instrument would speedily get out of tune; it is the absence of a similar test in modern voice-training that causes voices so soon to decay.

Eighth Law.—No effort; all effort is error. Nature

says, in effect, "Put me right, trust me, and I will play for you; distrust me or discourage me, and I will trick and disobey you."

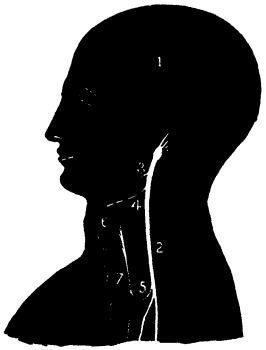
Garcia writes, "My father (Rossini's Almaviva) often said that the beauty of the voice constituted ninety-nine hundredths of the power of a singer." This beauty is within the reach of all; for a bad voice is another form of cripple.

The whole gist of study may be summed up thus: Hold the breath on deep inflation; by ceasing to will to hold, Nature, not self, sets the instrument in accurate action; let the pressure continue the sound, and by repeated use in such manner the instrument will in time become habituated to right action—a servant to our wills instead of a tyrant crippling and frustrating our desires. It is strange that, exactly at the same time German assumption was doing its uttermost to destroy the little known in voice training, a medical man should be making experiments in Edinburgh, which resulted in corroborating the greatest scientific discovery affecting the science of voice-production that has ever been put before the public, and which discovery conclusively supports, from a scientific point of view, the teaching of the ancient school of song. This explanation of the use of the false cords and the ventricles (V, p. 20) gives the true solution to the right use of voice, the air in the ventricles acting somewhat analogous to the air which a trumpet-player imprisons in his cheeks; the greater reservoir, the chest, keeps the lesser ones, the ventricles, always full, and the control of measured force

from the greater is dependent upon the fulness of the less, this simply owing to the distribution of nerves. No man can speak or sing with perfect self-possession and accurate response to will unless he has masterful control over the respiratory apparatus, and no man can have this control unless his organs of voice be rightly used. A corroborative proof, being the connecting link between Dr. Wyllie on the one side and Signor Garcia on the other, is found in the fact that sound can be whispered at the false cords, the air escaping in an elongated hiss, while the true cords being open do not vibrate. The breath under these conditions is held back in sustained escape, and is consumed in about the same time as it would be consumed were a vocal tone accompanying it. Further squeezed, the false cords produce "falsetto."

A beautiful illustration of good production is found by blowing out the cheeks and putting vocal tone in it. What the compressed air in the blown-out cheeks when sounding the buzzed sustained consonant B is to our vocal tone, associated with lip-resistance, that the compressed air in the blown-out ventricles is to the *invisible* but artistic voice. In brief, the set *Ah* of the old school is suppressed escape at false cords with voice added to it, and this physical equilibrium—the hydrostatics of voice—has its mental equivalent, a perfect physically unfelt control. The *superior* laryngeal nerve (4) acts upon the crico-thyroid muscle, and the inferior constrictor muscle. The crico-thyroid muscle pulls together the thyroid and cricoid cartilages, *both ascending*, and the effect

of this action is to tighten the vocal cords and consequently to raise the pitch. This intrinsic muscle owes its action to a nerve-energy directed *downwards* through the superior laryngeal nerve (4). Thus much for direction of will or thinking *downwards* against the initial *automatic* upward pressure.



1.—Seat of thought.
2.—Pneumogastric nerve.
3.—Pharyngeal nerve.
4.—Superior laryngeal nerve.
5.—Inferior laryngeal nerve.
6.—Larynx.
7.—Windpipe.

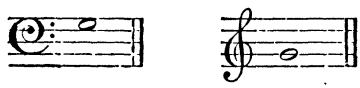
Next, at the outer side and over the *top* of each ventricle is placed a number of muscular fibres, the function of which is to *resist* the strain of the compressed air brought to bear upon them by pressure within the ventricles; and it is known that there is an abundant supply of nerve-branches from the superior laryngeal nerve distributed to each ventricle. These nerves are placed there to

inform consciousness of the varying degrees of pressure brought to bear from within upon the tense and distended surface of the ventricles.

Ninth Law.—In producing the aspirate H our will acts in the *same* direction as the escaping air, twisting our bodily form in the direction of the flow; the corrective to this is willing the other way, thinking downward and striking at the note from above, as it were. This act changes the internal state back to its forsaken shape, just as a drill-sergeant bends upright a stooping recruit, or just as we roll a piece of music the other way to straighten it. This enlisting of the mind to help the body considerably shortens time, and does for a student in a few months what took Cattaneo more than twelve months with me.

The best starting-point for study is the note produced without tension and without relaxation, but solely by approximation of the true cords, the true cords and the breath equalizing their respective force, for in this the conditions both of elevation and depression of pitch are not involved; the note produced from the detached larynx by imitating the action which contracts the fissure would give the easiest sound in the living subject: this, in the average adult, male or female, is middle G, and in strange corroboration we find G accepted long ago by priests as the most convenient note upon which to recite words.

MALE. FEMALE.

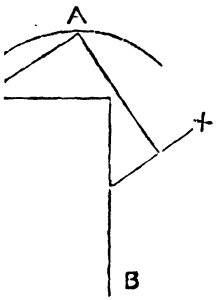


Of course the "station note" is relative, not absolute, like all other conditions of an individual, but we are arranging an average of the species.

Here it is important the student remove a popular error. It is generally believed that remote notes are more difficult than central ones. This is not so: all effort is error; for instance, we see to a certain distance, and to a certain nearness; within these limits all points of sight are equally easy. We hear to a certain height and to a certain depth, and within these limits all notes are equally audible. So with voice: all notes are equally easy within the full compass.

Having fixed the station note of equally sustained tone and of unflagging strength, all notes below are made by the larynx sinking and the attendant relaxation of the cords; from the detached larynx, male and female, Dr. Wyllie produced an octave below the station note; a like octave can be produced from the living subject. For the notes above G the larynx rises. As the larynx ascends in the pipe, the speed of the ascent of the cricoid is swifter than that of the thyroid; so that the cricoid in its upward progress gains on the ascent of its auxiliary, the thyroid; hence the vocal cords are tightened, and the pitch of voice raised. In this ascent the thyroid and cricoid rotate upon an eccentric centre, causing the planes of both false and true cords to become with each heightened tone more slanting; thus, the sound, travelling at a right angle to these planes, finds its point of impact on the arch of the palate more and more forward with each ascending sound. This

physiological fact was revealed to me by the simple act of putting my finger on the thyroid and singing a scale upwards. I proclaimed this in the *Orchestra*, 1879, and in my reprint *Vox Populi*, February, 1880, and physiologists are accepting it. Here are Sir Morell Mackenzie's words: "It used to be believed that the effect was produced by pulling the thyroid cartilage down so as to increase the distance between it and the arytenoid cartilage behind, and then *stretch* the vocal cord by having one of its points of attachment further away from the other. It is now known that it is the cricoid cartilage which is pulled upwards at its front part" (p. 21, second edition). Dr. F. H. Hooper, of Boston, U.S., has proved experimentally the truth of this; so another error is swept away, and with it the "low larynx" and "fixed larynx" systems of training. Professor Huxley evidently drew his conclusion from the dissecting-room, and forgot the practical test I applied in the living subject. Unfortunately, he still insists he is right, and that the depression of the thyroid heightens pitch, and that the elevation of the thyroid lowers it ("Elementary Physiology," p. 183). My discovery solves Madame Seiler's difficulty: "That the voice must be brought forward in the mouth is now acknowledged as necessary and aimed at by the best teachers. But the reasons why the tones thus sound better are not known" (p. 112, Phil. ed., 1868).



B—Outline of pipe.
X—Line of fissure.
A—Point of impact on palate.

Sound can be directed like a jet of water out of a fire-engine; the use of speaking-trumpets at sea proves this.*

Tenth Law.—If we have the extreme note of a register, we necessarily have all those within it, just the same as if we know how far we can reach we have all the lesser distances within that circumference; or, to take another illustration, if we know how much we can lift, we can lift all lesser weights.

Low Register.—As this is a register of lateral relaxation, work upwards from B to F in semitones.

* If we note the singers of our popular comic operas we find those whose words can be heard have "no voice," while those who have voice do not clearly articulate words; the larynx is not sufficiently high to rightly place sound, so with uttered words it opens and the tone is deadened; but kept close by will-force, there is tone, but no words.

MALE. FEMALE.

This metaphysical principle is an incalculable saving of time.

Middle Register.—As this is a register of lateral tension, work downward from C or D to F in semitones to the point of repose, the station note F or G.

MALE. FEMALE.

I give the minimum compass safe for self-tuition. F is given as a common note capable of being produced at will in either register.

All voices have two registers of about five notes each register; one register made by relaxation of cords, the other by tension of them. All other notes are evolved in some way or other from these, and are of necessity included in them.

Elasticity.—Bodily parts are more elastic in a dead animal when warm than when cold, they are still more elastic in a living animal than when dead. We regard the old classical compass of two octaves as the minimum compass of all voices.

Here is pointed out the influence of second causes upon pitch, so that the student may know what difference in hue to accept as true and what to reject as false. A change in hue arising solely from change

of direction has been a great source of error in our teachers, who, when speaking of "registers," have been invariably misled by this. The object Nature evidently has in directing tone is that with equally developed force vocal utterance and articulate speech can be simultaneously used without one influencing for evil the other. This affords another proof of the superiority of the fast dying old school which insisted upon "a forward production" as a basis for song; and the reason why the larynx does not assume its right elevation for higher notes than the station note is because during our past years it has only been used *indirectly* to strengthen spoken words, so that a tendency has grown up in the larynx to assume and retain the average altitude of language and to leave the production of all notes of greater height than the average to *will-force* acting through the chest-muscles alone. Consequently most untaught persons produce sounds above the station note by excess of blast, as seen by the rapid exhaustion of air, as heard by the point where the sound strikes being far back in the mouth, and as felt by the Adam's apple being low, and finally corroborated by a feeling of personal fatigue when such notes are given forth. The corrective study for this is having recourse to a steady spring from the organ itself; this, by practice, induces a habit of rising until a position of highest elevation is fixed. Take aim, therefore, poising the voice, and attack D or C striking downwards to meet the air at the larynx. A curious phenomenon occurs about D or E: if the larynx ascends above this point the sound is pro-

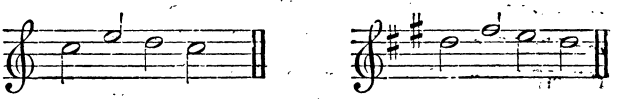
pelled directly out of the mouth without any reflection on the arch, so that a shout or noise results.

High Register (first mode).—This, then, is the natural law; as soon as the sound obtains *no* reflection the scale must be continued by letting the larynx *sink* and going over the preceding five notes, G to D, with greater pressure, thereby elevating them a fifth (full harmonics). The descent of the larynx about high E can be felt with the finger. All these notes above the high D are producible in more ways than one, but all depend upon a correct emission of the tones below, so that the old teachers were right in insisting on fixing middle and low notes, although they did not know the reason why this should be done. In soprani sfogati, tenori robusti, and in all low voices of either sex, the notes above D are full harmonics produced by increased blast acting upon the cords fixed for a fifth below. This is a backward production, and is what the old school called "voce chiusa," or closed notes, giving this: and an octave lower for tenors, a third lower for contraltos, a tenth lower for basses:

There is, of course, nothing closed except the parts making voice, but the *direction* of tone is different. If we imagine a straight line drawn from the tip of the nose through the larynx and out at the back we get *the direction of thought* and the upward and downward direction of vibration in the "open" register

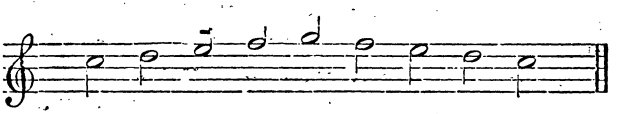
or forward production; if we imagine a straight line drawn from the back of the head through the larynx, down to where the ribs part in front, we get *the direction of thought* and the upward and downward direction of vibration of the "closed" register or backward production. I have known this metaphysical explanation set the registers in a few minutes. To induce the larynx to sink for the high notes, the old school used the vowel *u* (oo).

Eleventh Law. — Change into a higher register lower down in ascending passages; change into a lower register higher up for descending ones. Cattaneo's mode with me:



The notes with tails turned up show the higher register, the ones with tails turned down show the lower register.

Corsi's mode with Mr. Maas:

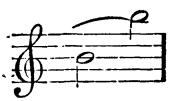


with same change of vowel.

High Register (second mode).—In "light" voices the notes above D are harmonics on a "node" from the true cords fixed for an octave and some for a twelfth below. By emitting a deadened high note (falsetto) and pressing above the thyroid with finger and thumb, the sound will suddenly burst out in a

bright clear tone; this is the production sought for by light singers.

The first high note Cattaneo put on my voice was B, and he took it from the octave below:



Twelfth Law.—Keep the position of the open (middle) note, and absolutely without any feeling or effort, *think* the octave above, but *think* and imagine yourself *pinching* downward. If this production will not come in this way, take the high note falsetto, then think and squeeze downwards from the false cords, the true cords will synchronise in time. In the living subject there are four series of tones: one set produced by Relaxation, one set by Tension, two sets by Reproduction; and the physical facts producing these four series are made manifest to man through created sound by four entirely natural but different hues. We know that air confined in spaces will strengthen and re-enforce sound. In a human body there are three caverns filled with air that influence tone—the chest, the pharynx, and the mouth—and that cavern which of the three exercises the preponderating influence in tinging tone has hitherto been used to give a name to that series of sounds so tinged; thus we have one set of sounds termed "chest," and another "head." Moreover, with an increasing current of air from below, the sound is carried by the current in one direction, and impeded in a contrary one. As all these second causes are

absent during observations on the detached parts, and as all remarks in medical works are drawn from this latter aspect of observance, we naturally find men of science writing of the "register" of voice (two octaves), whilst musicians, approaching from a different point, have confusedly brought in all second causes, and so speak of the "registers" of voice; hence the discrepancy in the statements of the two classes of men. The sudden change of hue in the female voice between middle F and G takes place just the same in the male voice, an octave lower, but owing to the difference in bodily form the resonance continues in the chest of man where it ceases in that of women; the ignorance of this physical fact is the cause of much false teaching, and has misled all previous writers.

Further, it is assumed by voice-trainers that because there is a difference of hue between one series of sounds and another series of sounds, Nature causes a "break" in the voice, which break has to be "bridged over" (see any vocal tutor). But a difference does not necessarily involve a defect; so what is erroneously termed a "break" may with better judgment be termed a "joint." A break is a bungle of ignorance, and the use of the term gives to airy nothings a local habitation and a name calculated to deceive the public; the term itself is based on the assumption that Nature habitually creates man a cripple, and thus teachers proceed to destroy a natural diversity in hue under a pretext of covering an imaginary gap. The hue with which each register is coloured, and which men try to annihilate,

is given by Nature for a definite purpose, and is entirely right.

Thirteenth Law.—Differentiate the registers, but assimilate the qualities. Just as a pianist knows which hand he will use, and never confuses between one hand and the other, so is a vocalist with his registers; and just as a listener cannot tell by sound which hand is in use, so a listener should not be able to tell by sound which register is in use.* This brings us to the science of æsthetics, which science is broadly divisible into that which stimulates, which may be called Motion, and that which depresses, and which may be called Repose. Power will excite, softness will tranquillize; so with height, and the opposite, depth; and with quickness, and its opposite, slowness.

Motion.	*Repose.*
Power.	Softness.
Height.	Depth.
Quickness.	Slowness.

The contradictories of any one of the above terms are found in the opposites to the accompanying other two; thus, the stimulus derived from height can be counterbalanced by slowness and softness, etc.; but

* A celebrated scientist said to me once, "Oh, Mr. Lunn, you think you change when you don't." To which I answered, "No, I *know* when I change, but you cannot detect it." Of course the proof of a change is that in early study anyone could have detected it.

in the voice, wherever we require an outer manifestation of constant excitement, Nature has strengthened her æsthetic law by fixing a hue which expresses that mental state irrespective of the words associated therewith; and wherever we require an outer manifestation of constant repose, Nature in like manner has fixed a corresponding hue. These are immutable results arising from an affinity between the receptive faculty and the intrinsic properties of the instrument. But where all kinds of expression are shown, that is, in the ordinary colloquial compass, the tone is a negative one.*

Fourteenth Law.—All false production can be used by an artist for a purpose. The "voce cupa," or dead voice, is voice adulterated by greater escape of air, in short, bad production.

There are a number of traditions which are incommunicable by printed type, for instance: There is a *vibrato* the exact counterpart of the "close shake" of the violin, beautiful if exceptionally applied, made by rapid alternations in pitch (not a shake): this is never taught and rarely heard.

We now assume the instrument perfect, just as a student of the piano assumes his piano perfect. Our next step is the acquisition of technique. In this we should use no accompaniment, plunge into the sea of sound; it is only a cripple who wants a crutch, or a blind man a dog to lead him. Much wasted work is

* Probably this physiologico-æsthetic fact, taken in connection with Dr. Wollaston's discovery of the *susurrus* of muscle, and the additions to this by Dr. Haughton, of Dublin, and Dr. Collougue, of Paris, may give the scientific basis for the solution of the much-vexed question of "pitch."

done by students accompanying their voice with their piano. The sheet of exercises I use* was alleged by Cattaneo to be the historical sheet used by Porpora with Caffarelli. He built up from single tones, semitones, preparations, intervals, etc. Now there are a few things to be noted in doing exercises. English is an emphatic language in sense, but a feebly emphasized one in sound, and the English transfer their habit of speech on to their music, so sing and play *tamely;* hence the proverb, "The English are not a musical people." But the test of a people's capacity is in the percentage of those who try; the success of them is seen by school or method; therefore a great percentage of feeble performers point to the conclusion of bad school in teachers—not to want of capacity in pupils.

Fifteenth Law. — Rhythm is a periodic accent and gives the first impression of form; increase then the proportion between the accented and non-accented notes. Tameness results primarily from insufficient accent.

Sixteenth Law.—Either a man's lower nature rules his higher, or his higher rules his lower; if he takes breath because he must, then his lower nature rules; if he breathe because he wills, then his higher nature rules. As music is the body of poetry and that body is form, breathe at equal distances in all exercises. Much of the tedium of exercise practice is removed by enlisting the mind in the work to be done.

For further exercises take Garcia's book with

* To be had from the Author.

the letter-press; its exercises are unapproached. Published by Romer and Co.

SUMMARY.

1. Location of will.
2. Mechanical pressure.
3. Vocal poise.
4. Compression of air.
5. Self-productiveness of voice.
6. Retention of conditions manifested by equal power.
7. Muscular development.
8. Mental ease.
9. Inversion of will and reversion of habit.
10. Natural economy.
11. Control of registers.
12. Vocal harmonics.
13. The æsthetics of voice.
14. Artistic liberty.
15. Mental stimulus through sound.
16. The principle of self-possession.

PART II.

VOICE-TRAINING was originally the work of past great singers, who taught by imitation; for many years this work has been added as an inferior adjunct to teaching playing upon the piano, the result being that we occasionally get a half-taught singer, who is carefully exhibited at great cost on festive occasions, and caused to sing at us, while we for the most part remain a nation of mutes; thus the public have got to look upon a beautiful voice as a freak of Nature, or a beautiful monstrosity, instead of being, as it is, a common gift of God to all, implanted in each of us for solace in sorrow, enjoyment in leisure, and spur in work. The difference, then, between the present essay and the mistaken suppositions propagated in accepted vocal works is this: each of the existing works is started on the notion that the writer is great and Nature poor and small, while this work assumes man's littleness and Nature's greatness, and asserts that men are better employed in perceiving a true thing than they are in conceiving a false one; to this end the economy of Nature will be shown, the gradual decline of tone through lost relationship will be traced, together with the introduction of spurious artificial force, and the injurious association of nerve-

currents by use of spoken words. The modes of restoration and readjustment by decomposition of nerve-currents and the severance of vocal tone from articulate speech have already been pointed out, going back in all simplicity to first principles as shown in child-life; and the gradual development by steady right-directed work has been enforced. We shall see how conflicting opinions have arisen, and how these, and observations from different aspects, can be explained, and, where each in its way correct, made to agree, and we shall see how science has been retarded by voice-culture having got into the hands of a wrong set of men. Of course, a true teacher of music would realize the immense advantage that must accrue to his profession if voice-trainers had a separate sphere of action. But, instead of that, it is generally assumed that the most difficult branch of all musical training—that of guiding an invisible instrument—is quite an easy matter, requiring no power on the part of the teacher to command any "utterance of harmony" from it himself, or any skill on his part! Are man's nerves and muscles easier to be played upon than tempered scales and ivory keys? It is not so, and only because custom sanctions the fallacy is the evil obscured. The intellectual world has not as yet elevated song into a science, so that it has never been other than a matter of imitation; but even the power on the part of a master to do and exemplify what is demanded is not considered a requisite of modern teaching.

"The greater includes the less." It has hitherto been assumed that song is a branch of music, instead

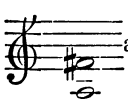
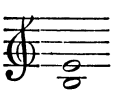
of admitting that music is a branch of song; all that exists in that is included in this, and other things exist herein besides, while so far as voice is concerned, the science of its production embraces oratory in all its forms. Naturally, then, the threshold of art has been in great part barred by false thought on voice. A musician cannot, necessarily, train a voice because he is musical; for the diagnosis telling a state of progress in readjustment of parts producing voice is ofttimes such that a musician, trusting to impressions of pleasure alone, would reject as false the very best of progress, thwarting a student under a mistaken plea of retrogression. Again, in making, arranging, or attuning an instrument, pleasurable sound is ever preceded by disagreeable noise. As in all cases of key-boarded instruments this is delegated to the fabricator, the public mind has become oblivious to the fact. If a player had to arrange blindfolded the component parts of his instrument strewn in an incongruous heap upon the floor before him, he would glean some notion of what a true trainer does. A voice-trainer should not be too musical—indeed, he need but know his notes, but he must know many things rarely or never included in a musician's education.

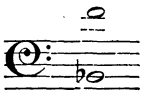
Let us test our teachers by their explanations of natural phenomena.

The following is extracted from Signor Garcia's work:

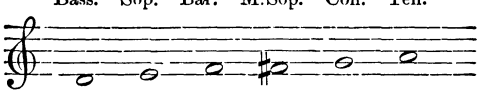
"Let us here observe that three registers of voice are generally admitted—chest, falsetto, and head. The first begins lower in a man's voice than in a

woman's; *the second extends equally in both voices;* the third reaches higher in the female voice."

Let this be well understood: it is asserted that the male chest register necessarily has a greater number of notes in it than the female, for while this latter can never go as deep as the former, the former can extend as high as the latter; in other words, representing notes numerically, say from one to thirty, one being the lowest, a male chest register may include from one to sixteen inclusive; a female can only include from nine to sixteen: thus this part of the female voice must be eight notes less in compass than the male, and *may* be more: that is the theory held by all musicians. Taking the elaboration of this faulty theorem from Signor Garcia, we find the same error developed in detail: He gives to the contralto—the lowest female voice—a compass of from low F to the G on second line of violin staff  to the medium—mezzo-soprano—from low A to F sharp  and to the highest female voice—soprano—from B to E  To male voices, bass from lowest E to upper D  baritone from B flat

to upper F  and tenor from D to top A  Granting Signor Garcia's statement: "this register of the chest is the essential base of all voices;" we will place the compass given by him to each, arranged according to the highest limit given: We have bass to D, soprano to E, baritone to F, mezzo-soprano to F sharp, contralto to G, and tenor to A.

Bass. Sop. Bar. M.Sop. Con. Ten.



It is seen the bass ascends to D, baritone to F, tenor to A—a natural difference enough, as these voices are rightly considered a third apart in pitch; but for the female we have E for the highest voice, F sharp for the medium, and G for the lowest, so that according to this arrangement the chest register extends in altitude *transversely* to the recognised pitch of each voice. But this is not all; it will be seen that the highest note in pitch of all the notes given is ascribed to the tenor, while the soprano—the corresponding voice in the female to the tenor in the male—has but one note above the lowest male voice. The mistake of giving such an extraordinary compass of "chest" voice to all male voices, compared with the compass given to the female, must be apparent to the most thoughtless observer.

Madame Seiler, the leading German authority, simply abstracts Garcia's error, but goes further, drawing a hard and fast line at an absolute pitch. She gives a division in the higher part of the male voice as corresponding with a like division in the low part of the female;* but, expecting her statements ultimately to conflict with those of the medical profession, she foils the evidence of dissection thus: —"But in order to render practicable the proper stretching of the exsected larynx, muscles and membranes have to be cut, which *sufficiently proves* that the functions of the organ of singing in the living must be *differently* carried on." Extend this statement and anatomy becomes valueless. In point of fact, nothing of the kind is thereby proved, but the exact opposite is suggested—namely, that the functions of the organ of singing are presumably similarly carried on, but better, more perfect, and more extended results would ensue from the living subject than are producible from the dead.

Let us turn to the metaphysical side of the question. Similar causes, in as far as they are similar, produce similar effects. Hence as anatomy teaches that the constructions of the male and female larynx are similar save only in size, the results, *i.e.*, the actions and sounds resulting from them must be similar, save only in that point which is the effect of the difference of size, *i.e.*, in the *pitch*. Therefore the female voice is an exact reproduction of the male

* The central and lower parts of all voices, adult or young of either sex, are always when at best *forward* productions, the high part of all voices, if properly produced, is a *backward* production.

voice only in a higher pitch; and this has been amply proved by experiments made with the parts detached. Dr. Wyllie, in his researches, produced what may be called the *station note*—that is, the note of sole approximation of vocal cords, without tension or relaxation. By slackening tension, each larynx, male and female, could produce sounds eight notes below the station note; by increased tension and increased blast, ten pure notes above the station note were produced—that is, upwards of two octaves of full vibrations, the female extending by the same mode of production one octave above the male. If then in death such results can be obtained, greater, not lesser results, would of necessity be obtained from similar things in life. We may accept Signor Garcia's definition of a register as being "a series of consecutive and homogeneous sounds, rising from the grave to the acute, produced by the development of the same mechanical principle, the nature of which essentially differs from any other series of sounds equally consecutive and homogeneous, produced by another mechanical principle." It is a law in natural physics that there is no effect without a cause, and if, as alleged, the female voice be not a reproduction of the male, there must exist a difference of construction besides that of size, which difference all anatomists in all time have on dissection failed to perceive. The *onus probandi* rests with our would-be teachers; they assert a difference, we demand proof that such exists. But more, identity in production is denied by writers on voice, yet universal laws are deduced from one sex as affecting both.

"We will study in the voice of the tenor the ascending progression of the chest register, and in the soprano, that of the falsetto and head registers" (Garcia). Then either it is wrong to deny coincidence of production, or it is wrong to generalize the sexes; this dilemma sufficiently shows that the inroads to science have not been deep, and that the dogmas advanced are either fallacious or premature.

Again, we are asked to believe that the "falsetto" is identical in altitude and similar in limitation, while the instruments producing these sounds differ materially in size. Finally, we are asked to believe that the power of forming a "node" (head register) is *denied* to most men, owing to an *absence* of the cuneiform cartilages. We ask the cause of these discrepancies: it is futile to account for the errors by saying, "It is seen as explained," because we call attention to the fact, that of a number of notes of equal pitch and apparently similar production, one alone may be *accurate* and possess true musical sound by the voice, and that such note cannot be diagnosed by the laryngoscope. "Garcia says himself that one-third of the glottis was always hidden from him by the epiglottis, and to this circumstance is the unsatisfactory character of his observations to be ascribed. But even when, after long practice, one is able at last to bring the whole glottis into view, this is not by any means enough. Not until observation has been so long continued that all the movements of the vocal organ are normal, notwithstanding the *unnatural* drawing back of the epiglottis, and not until the process that goes on is found again and

again to be always the same, can it be recognised as fact." (Seiler.)

To this we object; the experimenter could not possibly know, under such contortions, that the vocal organs were acting in their "normal" state; and in order to render practicable the desired observance of the instrument during the emission of sound, muscles and membranes had, by "long practice," to be distorted, which sufficiently proves that the functions of the organ of singing, when accurately emitting tone, are *differently* carried on. To observe an ugly, unmusical tone, that, being falsely produced, is readily "found to be too fatiguing," and therefrom deducing fixed laws, is about as sensible as taking a cripple to represent the human race, and deducing physical laws from his distorted state.*

In Mr. Arnold's work, "A Method of Teaching the Deaf and Dumb Speech, Lip-reading, and Language," the epiglottis is drawn as ruling and directing the stream of sounding air, while their teachers, to obtain

* I have been experimented on many times with the laryngoscope, and had pupils examined, but the voice has never under such conditions been true to art. Here, again, is independent testimony.

Mr. Maas's testimony: "My experience is that, when required to sound my voice with the laryngoscope inserted at the back of my mouth, it is utterly impossible for me to make a vocal sound; the only utterance I can make is a noise like the baa of sheep, or rather like one would imagine the sound would be in strangulation."

Mr. Santley's testimony: "Some few years ago I did try to produce a note while my medical man was examining my throat with a laryngoscope. I could not produce much sound, and what there was I should say was decidedly unmusical."

Mr. Sims Reeves's testimony: "My advice is, let the laryngoscope alone. Students who wish to learn to sing had better apply themselves to the art. It is my opinion that a singer should avoid looking down his own throat; too intimate a knowledge of the mechanism of the same would render him nervous and timid."

some letters, press back the tongue and depress the epiglottis, hiding the voice organs.

As in death, so in life; there are two octaves of full vibrations natural to all voices. These two octaves, if in the male, are usually classed under one term—"chest;" while in the female they are always classed under two, and sometimes under three terms. This confusion has arisen owing to persons mistaking reinforcement for generation; a violin-string is a generating cause, the woodwork strengthening the created sound.

This explanation accounts for the conflict between the opinions of musicians and physiologists.

Then there is the "falsetto," which does not extend equally in pitch in both voices, but extends collaterally, with the greater part of the full vibration: this is, as its name implies, a false production; it is created by the false cords being squeezed together, the true cords being open. The credit of discovering this is due to Dr. Illingworth.

Then there is the harmonic, or "node," which weakly people and persons of small chest-power substitute for about the last five notes of the full vibration. This results from skill, and not from the possession of a superfluous cartilage.

The high A of Mr. Reeves and Mr. Maas, the high G of Mr. Santley, and the high B flat of Mdlle. Titiens and Miss Anna Williams, are all identical in method of production: they are called respectively male "chest" and female "head;" while the full vibrations of Mdlle. Titiens and the harmonics of Madame Burns differ in production, but

are classified by masters under the one term "head."

Such errors of statement arise from a confusion between first and second causes. This is readily shown. Any difference which is observed to exist between vocal effects obtained from the larynx when attached to the living person and when detached after death must be owing precisely to the difference of these two states or conditions under which the organ is examined. For we cannot admit a difference in the generating cause of the voice itself (*i.e.*, the material organ). Hence any apparent antagonism between the hue tinging sounds as created by the voice of a living man, and that observed in sounds produced by a living woman, must be due to *auxiliary influences* external to the mere organ of voice considered in itself. Nor is this leaving too much to be accounted for by such external influences; for there is very little difference between the sound of the male and female larynges when detached, beyond this, that the voice of the male is set several notes lower than that of the female. This absence, then, of any important distinction between the respective results of the two detached larynges is, we here contend, due solely to the fact that they *are* detached, and are cut off from the surroundings and influences of the living body.

For known reasons the breathing of woman is pectoral, while that of man is abdominal; owing to this deeper breathing on the part of man, the whole scale of man's tones, when under full vibration, is tinged by this under-reinforcement, but this under-tone soon ceases in woman—it ceases when the larynx,

by its ascent, has caused the plane of the vocal cords to assume a position so slanting that the full force of tone is thrown forward into the mouth. A female chest may be compared to an inverted cone, a male chest to a cylinder; the reinforcement would naturally be different under such different forms. The deeper breathing in man accounts for the first fallacy of singing-masters, and sweeps away the apparent discrepancy between the results attained by experimenters and the exemplifications presented by our songsters, and also accounts for the extraordinary assertions made by our teachers respecting the male as contrasted with the female "chest." Consequently it may safely be asserted that the vocal cords are subject to the same natural laws as all sounding bodies, and as the sole difference between the male and female larynx is one of size alone, the voice from the latter *is* a reproduction of the former on a higher scale.*

Madame Seiler attempts to support the fallacy held by voice-trainers thus: "As the male larynx is about a third larger than the female, it is plain that the registers in the male voice have a greater expansion." On the contrary, the expansion would be similar; the writer evidently deduced a conclusion from excess in length, irrespective of additional breadth and thickness. The difference between the male and female larynx is uniform in all these three dimensions; thus *greater* change of state would be required of the larger larynx to produce a *similar* result to that obtained from the less. Of course, a

* See Dr. Gordon Holmes in *Medical Times*, April 11, 1885.

slight modification of expansion might arise from some little difference in the intensity of attractive force, but this would be an individual, not a sexual difference, and might exist in cords of similar length, and one would be likely to attribute greater elasticity to members of the more delicately organized sex; this, however, is inadmissible in laying down abstract principles.

The fact that the old male soprani voices were identical in pitch and register to the female voice, is another refutation of the accepted fallacy.

To obtain a true theory of vocal emission the conclusions arising from different aspects of observance must be made to agree. As a scientific basis, we have the observations of the anatomist, who has pointed out, irrespective of results, what the instrument is, and what he has gained from the instrument acting by itself, as he imagines, in accordance with natural laws. Then we have a number of theories, more or less tenable, deduced from the complex results obtained from the instrument acting in connection with other influencing causes. Of these theories some have been drawn from the instrument acting in strict accordance with Nature; others, as in the case of all laryngoscopic observation, from the instrument more or less distorted.

We have the theories of unscientific vocalists; we have the theories of musicians who reason by analogy; and we have the theories of scientific men who cannot sing or produce aright their own voices. It is my privilege to explain away their differences.

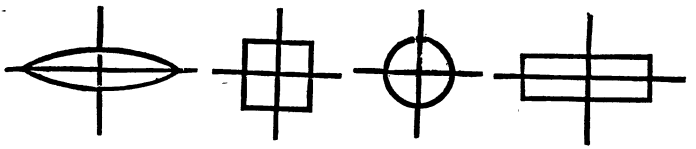
It is singular that in all experiments, both on

living and on dead, the most *important point* seems to have been overlooked, and that is that there is *beautiful* as well as *ugly* vocal tone; that beautiful sound is the natural result of true adjustment of an instrument over which the orator or singer has absolute control, while ugly sound is but a crippled result of solely a partial control. There have never been any attempts accurately to define wherein the difference lies between a *true* and *false* use of the human instrument of sound, nor has anyone tried to show the induction of error, and trace its corrective study.

With a view to secure this beauty of tone essential to the art of singing, the voice-trainer has to reinstate a control proper to Nature, which control has become *weakened* by the association of articulative speech with vocal utterance, causing (1) a perpendicular, and (2) a horizontal weakness—purely a physical disadjustment, in effect causing the sound to be feeble, dead, and only partially responsive to the will. We must correct the horizontal weakness by a right adjustment of the horizontal force, and the perpendicular weakness by a right application of the perpendicular force.

Sound is air in motion obstructed, or air stationary put into motion by an elastic substance. In a string instrument the solid is the active principle, acting on a stagnant fluid; in a wind instrument the fluid is the active principle, acting on a stagnant solid. Noise is either a single disturbance of air or conflicting disturbances; pleasurable sound is the result of successive and equal disturbances; so that a noise

arising from a single disturbance may only want *continuity* to transform it from offensive into agreeable sound. Where sound results from air resisted forcing itself through a fissure, that sound cannot be musical unless the fissure be symmetrical—that is, unless it be divisible by two straight lines at right angles into four equal parts.



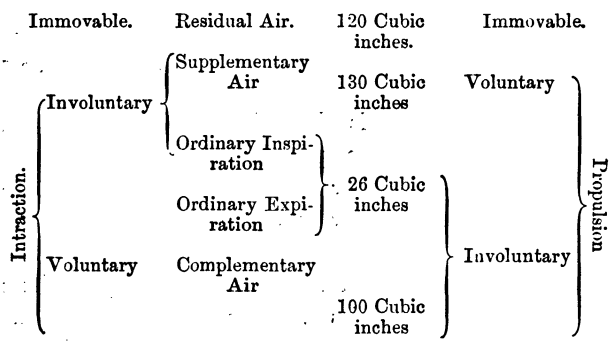
Musical sound, as before said, is compounded of clearness, smoothness, volume, and intensity. When air passes through a fixed fissure, clearness results from the smallness of the fissure, smoothness from its form, intensity from the force of blast resisted, and volume from air imprisoned in one or more caverns. In a vibratory material, the clearness, the basis of the quality, results from the intrinsic nature of the thing; the smoothness from unimpeded swing; the loudness is owing to the width or amplitude of swing; and the volume results from reinforcement from attached parts. A vibratory tuning-fork placed on a table has its sound so strengthened thereby that a child, judging by sense of hearing alone, would ascribe the sound to the table, just as a child would suppose a rainbow to be an arch of colour supported by its ends resting on the ground; vibratory matter placed above air imprisoned in the chest has its sound so strengthened that many ascribe

the sound to the chest itself—hence the term "chest" register. Thus much for generalities; now for particulars.

All that we do is dependent upon resistance; there is a resistance acquired, and there is a resistance incidental to our being; there is a resistance permanent and another temporal. In all our relationships with the world without, our control is an acquired knowledge of forces acting in opposition; this knowledge results from numerous past experiences, and has grown with our growth. In our own construction there are forces placed in opposition, so that, when in a state of repose, muscles are not inert and flaccid, but balance each other; this condition is what is termed "tonicity."* With the organ of voice there is an exactly similar condition, which may be termed "the tonicity of voice," and it is the purpose of this work to explain this balance and its disturbance by spoken words. Under this condition of balance breath and cords act equally, the pressure and resistance become equipoised, and a small yielding surface is presented by the vocal cords. We have to consider our two forces: (1) air in motion (breath) and (2) the elastic obstruction.

(1) The perpendicular force, that is, the pressure acting upwards in man. The following plan of our breath-power will illustrate the first of these two forces.

* If an arm be dislocated, the muscles which pull inwards are released from the opposing tension, and considerable and somewhat rude force is required to draw out the arm sufficiently to replace it in its socket.



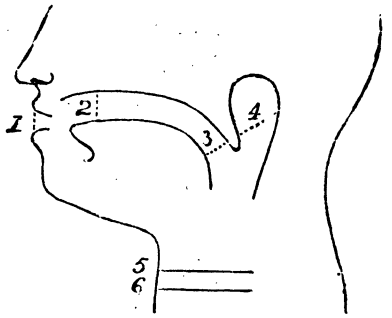
The *residual* air is that which we never can get rid of; then there is the *supplementary* air, which in ordinary breathing we do not expel, but which we can squeeze out if we will to do so; after these there is the small quantity of air added to the two former quantities, which both in its exit and entrance is independent of the will; lastly, we have what by willing we can add and forcibly draw in over and above the preceding. On the one side, what is drawn in by Body can be expelled by Will; on the other, what is expelled by Will will be drawn in by Body.

As there is no occasion for a public speaker or singer to do the work himself, when the involuntary contractile muscular force will do it for him, it may be laid down as a Universal Law that Complete Inflation is the first condition for true use of the organ of sound.

(2) The second or horizontal force is two-fold: (*a*) from right and left of the throat, (*b*) from front to back of it. The former or perpendicular force depends for its accuracy on this latter or horizontal force. This is

the principle by which the breath may be imprisoned; this necessitates a short investigation of speech. It will be seen that Nature's law is one, and a most simple one; and that however complicated language may appear, it is reducible to a few fundamental principles.

The first place where breath can be resisted is at 1. This resistance results from a closure of the lips. By ceasing to will to hold, an explosion of the air takes place, in result the letter *p*. By holding with the tongue at 2, the air is imprisoned; ceasing



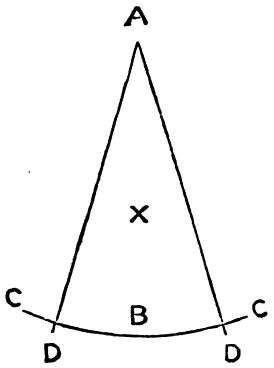
to will to hold, an explosion takes place called *t*. In ordinary expiration, the breath escapes either through the greater passage terminating at the mouth, the column of air in motion striking on the soft palate and elevating it, or it escapes through at 4, and thus acts by the nose. By holding breath at 3 and 4 both passages are blocked, the uvula acting directly in this, occupying the indentation at the base of the tongue, and thereby aiding the resistance; by ceasing to will to hold, an explosion takes place

called *k*. These consonants, *p*, *t*, and *k*, may be termed simple complete obstructives—one a labial, one an arco-palatal, and one a faucial obstructive. The principle in each is one, an act of the will acting in different localities, and causing, owing to the nature of the obstructing force, one explosion of air; in effect, noise. The difference in result is not owing to difference of principle, but difference of locality in the application of the principle. These consonants can be further increased in power by compressing the breath before uttering them. By going lower down still, to 5 and 6, we come to vocal utterance as contrasted with whispered articulation —that is, we find the same power of obstruction, but which, if rightly released, causes a continuous vibration; in effect, true musical sound. The action of this part we have to settle.

It is better to illustrate by abstraction, as physiological sketches are to the living subject useless for teaching purposes, and indeed are confusing rather than aiding; so here is given an abstraction of the horizontal force supplied at the lips of the organ of voice. A D represents the outer line of one vocal cord, A D′ the outer line of the other vocal cord, and these move together towards the point B.

Let A D, A D′, be two straight lines revolving on the axis A, and describing the segment of the circle C. Let the enclosed triangle represent the space through which the air in breathing passes. If we suppose an equally diffused force propelling a fluid through the fissure, the fluid would escape the most rapidly where the two straight lines are at their greatest separation;

this escape would be unequal along the whole length of the fissure, increasing in proportion to the increased size. This inequality of escape would be less or greater according as D D′ are attracted to the point B or repelled from it. Now, it is clear that a fissure having two sides greater than a third cannot be divided into the required four equal parts unless a point be made at B corresponding to the fixed point at A. If this be done, the points A B being equal, the

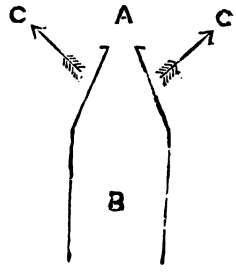


lines A D, A D′, would assume a parallel position. Supposing these lines to represent the boundaries of an elastic substance, they would, under aërial pressure, alternate between parallel lines and ovals, thereby making the escape of the fluid through the fissure relative and equal, *i.e.*, beautiful as a sensation called sound. Dr. Marcet thus clearly expresses the action: "When air is blown into the windpipe, it must force its way through the vocal cords, and by so doing cause them to bulge outwards; but the air now

finding a freer exit, and the pressure being relieved, the cords, from their elasticity, will immediately resume their former position. At the same instant the blast, meeting afresh with resistance, will again move the parts aside, and by that repeated action the current of air will be divided into a number of (equal) sections, reaching the ear in a succession of waves, and thereby producing a vibration perceived as a sound."* Such are the conditions for true musical sound by the voice; but there are two forces at work for evil to prevent right action—one derived from the association which has grown up between the nerve-currents ruling the different positions of obstruction; the other, owing to the use of vocal utterance as a secondary thing upon which articulation has been superposed, and the question is, How to get, in the living subject, this point at B?

Having considered the action horizontally, we next consider it perpendicularly.

If a stream of air (expiration) travelling up a pipe in the direction of B to A comes in contact with a contraction of the pipe, narrowing in the direction towards the fissure at A, the pressure below will distribute force in the outward directions C C—upward and outward pressure, a principle acting *from* the mediant line. If the contraction is held by will-force, then we have a physical law in conflict with the mind; this conflict, this struggle, is



* "Clinical Notes on Diseases of the Larynx."

the main cause in voice of our modern "vibrato," for the sketch is only an abstraction of the lower part of the vocal organs. Either the voice yields to the upward pressure and becomes rapidly enfeebled, or there is war.

The space above the false cords and the space leading from the windpipe to the true cords are wedge-shaped, each inverted to the other. When the true cords are approximated their upper surfaces present a broad flattened plane falling away obliquely downwards and outwards, thereby leaving an angle of considerable size, which forms the margin of each vocal cord. The same obliquity is observed above the false cords, while their lower margins are defined by the ventricles, well-marked pouches which extend upwards behind them about half an inch. Now it is to be borne in mind that by closure of the entire instrument complete stoppage is effected, not only of inspiration, but also of expiration; the most powerful efforts at either being rendered quite ineffectual. This is in a sense due to the action of those intrinsic muscles of the larynx which close the cords; but the strength of these comparatively minute structures is in itself inadequate to resist the enormous power which the air can exert upon the true cords from below.* When in experiments upon the dead or

* Dr. Hutchinson gives as the result of experiments upon the dead subject 580 lb. as the total pressure over the surface of the chest, reckoning an area of 206 cubic inches, and adds, that as during life much more air could be used, "there can be little doubt (judging from the rapid rate in which the elastic force increases when the distension is approaching its limit) that the muscular power to overcome this, towards the close of a very deep inspiration, could not have been less than 1,000 lb."

detached larynx artificial expiration is produced by forcing air upwards through the larynx, all attempts to stop the current of air by bringing the true cords into contact are futile. Owing to the form of approach, the air wedges itself between the vocal cords and produces in its escape "a sound which more or less resembles the voice." In inverting the current of air perfect resistance is obtained by solely approximating the true cords; the air catching on their flat edges makes them act just as the valve on a pair of bellows acts, the greater the force downwards the tighter is held the obstruction. But on bringing together the *false* cords the closure of the parts is found to be complete; the simple approach of the free edges of the false cords proves sufficient to obstruct entirely the full force of air acting upwards from below. This arises from the air in the *ventricles* creating an influence upwards and forwards. The conclusion to be derived is obvious: there is within the larynx, that is, the whole instrument, a double valve, capable of controlling both the exit and entrance of air; so that we see the plan found so commonly throughout the body in such strictures, as in the course of the veins, holds also good in this.

On placing the finger on the point of the Adam's apple, holding breath, and compressing the air by putting the expiratory muscles into increased activity, the larynx is felt to rise; this results from the air acting in the chambers and on the wedged approach to them, and together thereby forcibly carrying up the larynx. The greater the pressure the more the chambers become inflated, and the greater the infla-

tion the tighter the closure, and consequently the higher the larynx. By feeling sideways with the finger and thumb above the thyroid, and compressing air, the expansion of the ventricles will be most apparent. A successive use of this expansion during singing accounts for the great breadth of throat which all true tonalists attain ; for, by a proper use of the organ of voice, the two flat plates of the thyroid become forced out, and a much less acute angle of approach to the front is obtained. At high elevation the larynx is mechanically shut, and the Will has to open it, but when in a lower position it is mechanically open, and the Will has to hold it closed.

Here is an extension of the principle shown p. 58. If a stream of air travelling up a pipe in the direction of B to A meet with obstruction by the two promontories below C approaching, upward pressure from B to A fills D and D, which become inflated, and if elastic expand, and the air within becomes compressed as the pressure from below B is increased;

similar to a man shutting his nose and mouth and gradually pressing from his chest. He cannot help himself; his cheeks are sure to expand, and the tension of the nerves which the air presses upon gives greater control. The caverns D D being filled with compressed air and yielding to the uttermost limits of their elasticity, bulge upwards, and the direction of the caverns being upward—being in the direction of the stream—the pressure exerted upwards through the walls is in the direction of the mediant line X, thereby contracting the fissure at C. Now this is exactly the condition of the instrument for artistic voice. If we construct an artificial larynx, with ventricles of an elastic substance capable of yielding a little to pressed air within them, and then with compressed air below loose a little the parts analogous to the *false* cords, so that the fissure between them shall be so small that a compressed condition of the air can be sustained, we get the whole principle of voice so far as the material side is concerned.

Having seen the action of the instrument, we have to see its connection with attainable results—results, be it observed, both musically good and bad. These are partly voluntary, partly mechanical. At the first cry of life the whole principle of true musical sound by the voice is displayed; there is clearness, volume (allowing for the size of the infant), and intensity, and only continuity is wanting to transform such cry into musical sound. It is admitted that life cannot ensue without this cry, or an approximation to it, so we will trace its origin. This cry is essentially mechanical, and is brought about by reflex

action of the spinal cord;* so it may safely be proclaimed that while people may be born cripples in other parts, they cannot in the parts producing music, for cry they must or never live: hence it follows that all false use, all bad sound, is *induced,* and can, therefore, be *removed,* unless the parts become diseased in after years. On the one hand, while reflex action causes the first inhalation of independent life, on the other, owing to the difference in temperature between the circulation of the blood and the temperature of the air introduced, additional reflex force is generated, and a complete closure of the false and true cords results; that is the mechanical process which goes on before the dawn of consciousness. This resistance against the rebound of the respiratory muscles drives the inhaled air into the most remote ramifications of the lungs, and thus furnishes the residual air which, as we know, is immovable, and remains even after death, and could not get there save by such action as the above. If the opposing power were not perfect, we should have no safe guide to prove the existence of an independent life.

Here, then, we find in the release of this obstruction—brought about automatically by sole approximation—the same application of the before-mentioned principle, air compressed and released, this being the basis of all language. The sound produced by the infant cry would answer to Dr. Wyllie's station note; but, owing to smallness of size, it would be, in the infant, considerably higher in pitch than

* The reflex action is a rebound of the nervous system, independent of the will.

the station note obtainable from the adult. Then we add another simple explosive at 5 and 6 (p. 55), which explosive, instead of being confined to one impulsive disturbance of the air, has, owing to the nature of the parts which generate it, a power of being sustained, and this sound, resulting from an equal admixture of breath and cords, is the open vowel *a*.

The vowel sounds of speech are five:

Italian—*i, e, a, o, u*. The corresponding sound in English would be *e;* and for the second, *eh*, or the first part of the diphthongal sound given to our first vowel *a;* for the third, the broad *a*, as in *father;* for the fourth, the first part of our diphthongal *o;* and for the fifth, *oo*, or the latter part of our *u*.

Professor Max Müller attributes the difference in vowels to the different form of the cavity above the organ of voice, and this, so far as whispered articulation is concerned, is true; but with full speech other influence is brought to bear—namely, a difference in the proportions of forces. To produce *e* (English) the larynx is higher, and to produce *u* the larynx is lower than it is for the central sound *ah*, so that, assuming equal pitch for each sound, we find for *e* more tension of vocal cords, and less consumption of blast, while for *u* we find less tension, and consequently greater consumption of air. The intermediate vowel sounds of course lean one way or the other. But all these vowel sounds are sometimes automatic, and are uttered under reflex action from a moan to a shriek, according as the direct nerve-current influences the immediate instrument of sound,

or the entire body—that is, according as the feeling experienced be acute or massive; so that we get language as the natural outgrowth of our construction. In this instrument of voice pitch can be made in two independent ways by tension of cords or by increase of blast. This is readily proved: on pressing backwards at the point of the Adam's apple, and uttering a sound, when the finger is released the sound elevates itself; on sustaining a sound, and giving a blow on the chest, the sound momentarily rises in height. The vowel sounds of voice may be best represented thus:

Equal combination.

A

E O

I U

Cords. Breath.

The two powers, tension and pressure, must unite, but *may* unite in varying proportions.

Professor Helmholtz has evidently based his "vowel theory" not on *trained* voices, but on ill-produced ones, just as we might deduce acoustic laws from a cracked fiddle or an ill-tuned organ. The tone of voice is primarily intrinsic, as the clang-tint of gold or of silver irrespective of form or superscription; and the united effort of master and pupil is to get accuracy of vowel tone with *least* change in larynx, in result nearest equal sensation of tone.

In training the deaf and dumb the contrary is the rule—the greatest physical changes are made to produce the difference between one sound and another, in order that the student may perceive the cause of

the result in sound. Many singing-masters commit this error in training.

Man is not protected from error like the lower animals, but while developing in one direction he may be injuring himself in another. Just as small type will produce shortness of sight, so the association of consonants in speech produces a loss of vocal control. The object of speech is to say what we have to say in the shortest space of time, and speech sacrifices everything to attain this one end; but the object of song is to say that which we have to say in the deepest and intensest mode; hence this latter appeals to man through all his powers of reception; speech owes its strength to profundity, song to amalgamated forces. We will briefly trace the fall of vocal tone. Weakening at 1 (p. 55) we obtain *b;* at 2, *d;* at 3, *g hard.* These, losing in power, require a substitute of sound upon which they can be superposed; hence partial approximation at 6 is introduced, and we thus get a series of compound obstructives, like two locks in a canal, and the consequent associated acts of will, producing in time habits of action.* This principle of substituting associated force for local weakness in the voice organs is still further developed: changing the channel of exit and closing at 1, we get *m,* closing at 2, *n,* and with further development we get the close aspirates, *f* at 1, *s* at 2, and the compound aspirates *v* and *z,* until we ultimately arrive at the height of unmusi-

* I believe it was on the vocal tone in B, D, and G that Strakosch taught Patti the location of thought and the economy of air. If this be so, he anticipated a physical discovery by imprisoning air in order to locate the will on the vocal organs.

cality, expiratory air forced out by voluntary pressure through the quite open tube, giving the letter *h*, the letter *h* being the exact polar contrary to true musical sound, for it is made by the uttermost opening the opposing forces A D, A D′ (p. 57). Physically, in speech, man blocks, crushes, splits, and slides, columns of air in motion. Now as the first principle of language is rapidity, so it follows that to gain this, continuity of sound must be proportionately sacrificed; hence it follows that to extend a vocabulary according to the ever-increasing wants of civilization, consonants are called into greater use, and vowel sounds are dropped. Coleridge, in his "Table Talk," supposes a language made entirely of consonants; and now we find such in daily use in our shorthand system, which is solely an extension of the principle, rapidity. Let the reader test the past statements by whispering *p b* or *t d*: it will be noted that *p* and *t* are respectively *b* and *d*, only made stronger by applying increased energy or stronger nerve-current at the points of resistance. Next note the difference out loud: *p* is an explosive carried by the force of a vowel succeeding it; *b* is a suppressed vocal tone exploding into a full vowel. But the aspirate *h* is air escaping as water runs through a sieve.

So that amongst the people of every nation we find two forces at work, one of development, one of restitution. The scholar is ever seeking for new symbols to express things or states of consciousness, while the man of small intelligence or few demands makes his words subservient to his bodily convenience; the one

adds and sharpens the consonants, the other slurs or drops them, and works on vowel tones; and this is the reason why the voices of the lower orders are generally more sonorous than those of the upper. The more developed a nation, the fewer inhabitants proportionately use their language aright, for the language shows the intellect of a nation at its best, and the higher a standard the greater the culture required to attain it, and the fewer persons with innate capacities capable of grasping it. Thus, accepting sounds as symbols, we find a natural power differently applied, which, while serving its purpose to the full, does not secure man in its use from substantial error in other directions. This shows the prospective benevolence of an Almighty Power forming with increased civilization new spheres of action in which man may find true work. And in further corroboration that the downfall of tone is owing to the daily action of articulate speech, it may be noted that children's voices are clear, musical, and sympathetic; they have not had sufficient use to cause the loss of relationship between natural pressure and resistance in the instrument itself.

If a man be obliged to make himself heard, he will obtain power in some sort of way if he can; but the chances are, if obtained, it will be obtained in the wrong way. It is curious to trace how this is brought about; for instance, the sharp thin sound of the "Cockney" dialect is the inevitable result of a forced power generated falsely. The constant noise of traffic compels in speech a sharp, clear sound, and, given the induced debility of the attracting muscles, this is

brought about by lessening the size of the passage above the organ of voice, thereby decreasing the volume, but by constriction gaining in power. And it may be noted that a sort of opposite to this is shown in the dialect of the "Black Country;" this dialect opens the sound, hence the credit of the Birmingham choir for "volume."

There is a class of men who seem especially to suffer from their attempts to create power falsely, so much so, that the result upon themselves has given the name of "the clergyman's sore-throat" to the disease. Of course, all those who of necessity use the voice much thereby cause a greater flow of blood to the parts, and the parts being exposed, are liable to be affected by sudden change of temperature. But this fact itself will not account for the disease, for it has been observed that those who can produce true tone do not suffer therefrom; the tone is the result of principle, not of practice, and one who starts falsely only becomes worse by continuous false use. So far as this disease is concerned, the first prompting cause is the substitution of constriction at the fauces (K) for the true obstruction at the cords. A tightness is felt just under the jaws, and in a little while the speaker complains of his throat "aching." This substituted power subjects in its attainment the whole mucous membrane lining the parts above the organ of voice to a constant irritating process, which, gradually producing a chronic inflammation, may extend downward to the organ of voice itself. This state of congestion owes its first germ solely to false vocal production; so that, as

"prevention is better than cure," there is *every necessity* for seeking in the larynx itself the power of rightly creating tone.

The modern German school ("koo, koo") produces this disease by throttling tone. Garcia condemns this modern innovation thus:

"Some masters recommend the use of the syllables *pa, la, ma,* etc., in order to acquire precision in striking notes; this plan (by which the lips, the tongue, and other organs not concerned in the emission of the voice, are set in motion) has the disadvantage of *merely disguising the faulty articulation of the glottis,* without possessing any power whatever of correcting it." (Garcia, p. 9.)

And the following case of congenital deformity completely refutes it: "The patient could not produce any faucial explosives (X, K, Q); these all became aspirates; but full and true tone could be produced from the cords."

These are the attributes of voice in civilized man. We have (1) *tone,* or quality of sound having its special character from the *very nature* of the substance vibrating. This is a Universal Attribute. (2) *Hue,* a modification of *tone, artificially,* and often *unconsciously,* induced by the special requirements of the particular language spoken, in part Universal, in part a Particular Attribute. (3) *Taint,* an exaggeration of *hue,* produced either by pushing the peculiarities of the language to *extremes,* or by *direct efforts* to produce sound by false and unnatural means. The sonorous quality observed in the speech of an Italian is owing to the "tonicity"

having been retained, for vowels do not necessarily cause the tone, but they allow true vocal tone to grow simultaneous with, and correlative to, the growth of speech. In English, on the other hand, the induced weakness of the attracting muscles forces a compensating obstruction to grow with the growth of our words, so that the preponderating vowel sound in English is *e;* physically, smashed air in the mouth gives our Anglican hue. As vocal tone does not exist in whispered words, and as the strength of it is found in the vowels, let the reader test this statement by picking out the vowels in any piece of English writing, uttering them aloud phonetically. No further proof will be needed to show which sound is mostly used.

The influence of climate in moulding a people's language is curious. In northern countries the climate says, "Keep your blood warm; shut your mouth." These languages gravitate towards "thinness." In southern countries the climate says, "Keep your blood cool; open your mouth." These languages gravitate towards "openness."

Then, to sum up this part, we find with increasing use of words an increasing principle of action throwing the horizontal force which produced vocal sound out of parallel lines, and, as a necessary consequence of this, we find the perpendicular force weakened; hence, on the principle of natural compensation, we find additional force brought from below by an act of will, which force, owing to the wedge-shaped approach to the vocal cords, aggravates the evil by forcing open the true opposing means from

which musical sound is emitted. That the English language is an *h*-producing one, anyone can readily see; and, taking the converse, how many Englishmen *dare* utter loudly a word beginning with a vowel? If attempted, either it would not be done, or, in spite of the speaker, owing to weakness of the muscles which draw the cords together, an aspirate would precede the vowel. Thus the idiosyncrasy of our people's speech is deadness, weakness, and general feebleness. The letters *m* and *n* cause the soft palate to fall and induce a "tinney" tone, the preponderating vowel *e* causing the tongue to rise lessens volume, while the aspirates *h*, *f*, *th*, *s*, *sh* and *ch*, completely open the voice organs, so induce a habit of deadness of tone. This is the average adult voice commonly called "natural." All nations have their national taint induced on the voice by spoken words; but it suffices to show the Anglican taint, a true voice becoming cosmopolitan. The case stands thus: As breath is a condition of our life, it always goes on independently of us; but as the utilization of air in motion is voluntary, so we have between absolute openness and complete closure (this latter being the only possible means of true musical sound, as has been shown) all the varying degrees between the two positions; and the use of articulate speech conjoined with vocal utterance disturbs the normal balance of the latter, which was to be proved.

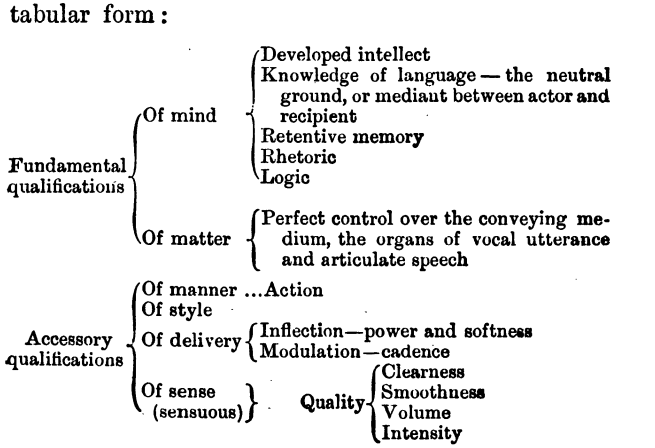
I consider this discovery, as regards the downfall of vocal tone, as most important. It will systematize tuition, words being selected to show a national warp, and set to music specially written to cure such.

However great a paradox it may seem, it remains true to all time, that the more beautiful a word as a sound, the more such word may frustrate its accepted function by clinging as a pleasing sensation in transit, for so clinging, it does not use its full force to awaken or to evoke an idea; this is because the direction of thought, as embodied in spoken words, is always to hide or sink the material in the purely abstract spiritual. But when man speaks, the self-contained force conveyed by the "letter" is modified by an outer manifestation of "spirit," shown through other channels beside that of words. The effect produced by a speaker on an audience is twofold—(1) acute, (2) massive: if the stimulus be in words alone as such, then it is "acute;" but to be effectual in such case, each hearer must be in his desire of advancement, in his power of advancement by past culture, and in his innate faculty, within the limitation which affords him contact with the speaker's intelligence, or in other words, both one and the other must be nearly upon a par. Mr. Ruskin says the same thing when he says no man can be rightly appreciated except by an equal or a superior; his inferior may underrate him in ignorance, or overrate him in enthusiasm; but he can only be known by the former. In song, and in a subtler sense in oratory, man is appealed to through *all* his powers of reception; hence the power, and hence the charm. An orator, for one end, unites the forces found in Sensations, Impressions, and Ideas, and he can only do this when he possesses absolute control over voice. Chronologically arranged

we get, first, the influence of tone; approved by the people, the singer is next submitted to the test of the musician; approved by this latter, he finally has to pass the judgment of the scholar, who not infrequently reverses the verdict of the musician. Higher training on the intellectual side is much needed in art.

There are other aspects of our subject which have been neglected. Nerve-force has a tendency to distribute itself over the whole circumference of the body; it is, therefore, a sign of culture when a nerve-current is restricted to one set of muscles. There are movements tied together, as in the case of the eyes, which cannot be separated; and there are associated movements acquired by continuous use, which in some cases require to be decomposed for a true use of either set of muscles. These acquired associations are brought about by the following natural law: Everything we do has a tendency to recur; an act is easier the second time than the first, easier the third than the second, and so on; finally, we eliminate consciousness, and hand the mode of doing the thing over to habit; we have to think to do it otherwise. "A stream of conscious nervous energy, no matter how stimulated, causes a muscular contraction—a second stream plays upon another muscle; and the fact that these currents flow together through the brain is sufficient to make a partial fusion of the two, which in time becomes a total fusion, so that one cannot be commenced without the other commencing also" (Bain); and the same principle goes on in the spiritual as in the material existence: thus the brain works unconsciously in the direction in which it has

been propelled—thoughts, like actions, have a tendency to recur. What, then, do we learn? We see clearly that by spoken words we have built up a force in our minds, and a force in our physical construction, each of which has to be undone and new phases of thought and action built up and made "secondarily automatic" before a man can venture to proclaim himself an orator or a singer. In other words, we must use our instrument in accordance with Nature's laws, and be able to play upon it simultaneously with, but independently of, spoken words; that is, we must undo the association between the parts producing consonants and the parts producing vocal tone. Whether it be oratory or song, it is all one; song is but an inferior species of oratory, with an exaggerated force on rudimentary component parts. Here, then, is oratory presented in a tabular form:



Tone is the basis of all vocal emotional expression;

it is a direct presentation of a sensuous pleasure. But it can become more; through it can be given a direct presentation of an inward natural beauty of soul which no words whatever can convey. Whether in song or speech, a control over the means of producing this tone is the first step, the first essential of good performance, for tone alone has the power to individualize the impersonality conveyed in a word.

It is the physiologist's duty to explain the construction of parts; it is the surgeon's province to readjust parts mutually disarranged, to readjust a disturbed relationship, but not necessarily to explain the physiology of the parts affected, and this surgical work always precedes the application of a power for a given end; finally, it is the voice-trainer's duty to explain principles of readjustment. The question for a speaker or singer is not so much how the thing acts, but how to get it to act aright, when not so acting—purely a surgical question. Nature has so created us that when in health we do not feel we have parts; consciousness without sensation is a law; to feel we have a tooth is to have a toothache. Actions acquired and rendered automatic are known to us through consciousness, never through feelings. So in song and speech, Nature tells us we only sing aright when consciousness informs us of the fact; if we "feel," we abuse the laws of our construction by erroneous use.

During the last twenty years more writing and still more talk has been expended upon the question of voice than in all preceding time; yet past history proves, by the superior results which it records, that

a method of training *did* once exist, which, so far as it went, was true in first principles, while *contemporaneous* history shows, by the *failure* it records, that this method is for the most part lost.

Let it be observed, the study of the voice is not like the study of an instrument detached from man; in this latter, everyone commences equally incapable of the desired control, but in voice a partial control may actually exist. In some cases students, having accidentally retained or dropped into the method of true vocal emission, have learned singing from a musician, and the master has been unjustly accredited with the result of the voice beyond its specific musical training. In order to sustain such reputation, treatises containing visionary and imaginative theories on voice have been published, which accounts for the numerous theories conflicting; nor had the few men who taught truth the power to prove, on scientific grounds, the correctness of their teaching and the fallacies of their opponents; so now, midst all the talk and all the printed works on vocal art, we find but one book that instructs the first step to after-excellence, which step it is our duty to rescue from surrounding error.

Voice production affects the pulpit, the platform and the stage; the principles of restoration should be known to every national-school teacher throughout the kingdom, and especially should they be known to every medical practitioner, for voice production embraces a far wider sphere than music, and penetrates where the latter never enters. It is said "prevention is better than cure;" by true use

of voice chest disease, in many who have its tendency, could be successfully warded off—this because a greater consumption of carbon takes place, quickening circulation and hastening digestion, so that true speakers and singers feel only hunger after work. Purely as a question of health, the voice should be cultivated collaterally with the culture of words; both spoken words and vocal tone should grow up together, but each power should be taught in its specific mode.* While medical men have often recommended the healthful exercise of song, they have never made their word of worth by troubling to go deeper into the question and deciding what work is right work, what wrong; this they should now do. We know how important it is to change the air we breathe, so that what we take in be not vitiated; how much more important, then, that the air within us be pure, and be not portable poison; yet all cannot be thoroughly vitalized within us unless we take either violent bodily exercise or obtain true use of voice. But in degree attention has been drawn by outsiders to this matter, and singing, under the generic term "music," has been introduced into our national training schools. Unfortunately the two methods in use are worse than useless, for while professing to teach "music," these methods destroy in more rapid degree than spoken words the true conditions imposed by Nature for producing vocal tone.

* The only position regarding the voice tenable by the musician as such is that of beginning training from earliest years of life, for such a position is based upon a principle of Conservation instead of Restoration. See "Conservation and Restoration, or the Two Paths," by the author.

The first thing logically done in order to generate in a person a perception of a difference is to remove all differences but the one required to be perceived, for by so doing no extraneous contrasts distract the observer's attention from the required point. An uttered word or syllable received by a listener for the first time appeals to him solely as a new sensation, and in his mind is unconnected with other perceptions; the sound expresses nothing, evokes nothing; it is a noise pure and simple, and can never stand as a symbol of another thing unless a perception of that thing be possessed and association has taken place in the mind between the two perceptions, the noise and the thing. As the ultimate test of discernment is shown in a person's subtlety of perception—that is, in seeing minuteness of gradation either in sound or colour, it is necessary, in order to evoke first perceptions in sound, to take for beginners, even for strengthening speech, some broad differences; hence the rudiments of music are rightly used as the simplest means of voice training. Music is accepted pleasurable sounds relatively arranged in successive, or in simultaneous and successive order. The perception of an interval or distance between two sounds is either possessed or it is not; if a person has it, he does not want to learn it; if he has it not, no uttering of syllables can evoke it, for the two perceptions have not been associated, so do not cohere; we cannot awaken what has never slumbered. A word, then, always *follows*, never *precedes*, the perception of the thing for which it stands; so it may be affirmed both "movable" and "immovable" words *impede*

the desired discernment of difference between two sounds of different pitch by bringing in other extraneous and confusing differences not required to be perceived. A man can readily identify the pitch of a note when sounded in a familiar voice, but "on a strange instrument it is less easy to make out the identity, the change of quality in the note, the greater or less emphasis, the different duration of the sound—as in comparing the piano with an organ—all tend to *disguise* the pitch, and to render a more delicate or a more cultivated ear necessary for its discernment" (Bain). The position, then, of most teachers, so far as song is concerned, is this: The association of words with vocal tone by long use fuses together two or more sets of nerve-currents flowing simultaneously through the brain, which currents mutually influence each other to the hindrance of a required simple perception; next, a particular association is induced, under the belief of culture, by joining set syllables to given sounds. This association has afterwards, by long practice, to be decomposed, in order that ever-varying and different words may be used with similar distances in sound—in brief, people virtually start with an induced error and pay to add a fresh one.

What Dr. Wyllie stated as the result of his experiments upon the detached larynx holds with equal force in the living subject. If the strength of such comparatively minute structures as the intrinsic muscles of the larynx which close the edges of the cords be insufficient of itself to withstand the automatic chest force brought to bear upon the true cords, it must be equally true that these muscels cannot of

themselves supply sufficient resistance to overcome the force of air when producing vocal tone; therefore there must be an inverse force removing the strain: for if there be not, the air acting from below upon the vocal cords will wedge them out of their parallel lines, not by their natural elasticity yielding to pressure, but by the attracting power which brings them together giving way; the cords would, in fact, be forced to resume in degree their state of repose, presenting a fissure of a triangular form, a form incompatible with the production of true musical sound.* We know that the contraction of any muscle demands two fixed points of resistance at its extremities, and if one of these break loose the force of contraction has nothing to expend itself upon, and thus a false position is incurred. In false emission, as induced by spoken words, the chambers are *not* inflated; thus, the muscles which draw together the vocal cords have to bear the brunt of the whole chest pressure, and, being of themselves too feeble to resist, of course succumb, and that is the sole reason of all feebleness and incapacity. So that my discovery of the use of the false cords and the ventricles just amounts to this: It proves that Nature has ordained compensating forces, under which condition the minute muscles of the larynx can accurately act, but that under less favourable conditions these muscles can only partially fulfil the functions for which they

* This balance of forces presents a subtle question of hydrodynamics. There is the perpendicular balance between the diaphragm and the larynx, and there is the horizontal balance between the permanent and the temporary point of impact of the cords: the first is dependent upon the second, and the second is dependent upon the first.

are destined; this is in strict conformity with Nature's universal principle of "least action" (see Rev. Dr. Haughton on "Animal Mechanics"). In true song or speech the work of counterbalancing different degrees of pressure from below is done by the air being inverted, and forming an eddy in the chambers or spaces between the true and false cords. This is proved (1) by the fact that under the conditions of true sound the chambers can be felt to be puffed out, while with false sounds they are not so felt; this accounts for the breadth of throat in public singers (my throat grew 2½ inches while studying). 2) A true vocalist does not feel as though he were orcing air out, but as though he were actually drawng breath in, and this even when emitting the most powerful sound: in false emission it is not so; the point of resistance breaking loose makes him feel as though he were running after a note to catch it.* (3) A true vocalist *knows* but does not *feel* he is singing; consciousness is the sole guide. (4) Under such conditions the sound can be sustained at full force for a considerable time, showing the economy of Nature; and the sound can be increased inversely to the quantity of air held in the reservoir below this, too, without studying the *crescendo* and *diminuendo*. Power, beauty, ease, and endurance are four different aspects resulting from the same state of balance. But in false song or false speech the instru-

* This psychological test is thus curiously perverted in a work of some prominence: "If you have a feeling as though it (the note) went away from you, and you had to run after it to catch it, it will never be a 'telling' tone." I did not write of a man's *present* feelings of a *past* act in relation to the *future;* I wrote of an actual feeling at the present during false production of voice.

ment of music is only used to partially catch the air in transit, and owing to this artificial mode of use it cannot resist the full force from below. *All* consonants throw open the false cords; some throw open both these and the true cords. In producing consonants the Will is *never* located on the false cords, and only by reflex action on the true. By speech the Will is diffused and distributed *away* from the vocal organs, and utilised in different and remote localities, and applied in a different direction to the physical laws meant to rule the vocal organs as a musical instrument. The voice trainer's business, psychically, is to *accumulate* the Will power, *locate* its application, and *reverse* its aggregate direction.

Here I would ask the reader to pause and inquire: Have I, or have I not, made out my case that language induces a local weakness? For if I have, this follows: All teaching that does not appeal directly to the correction of this weakness is false. Now, as I read history, nothing can show the failure of modern teaching more than the high price demanded by public vocalists, for price is regulated by demand and supply. Moreover, the number of those who excel compared with the number in past years is, one would think, conclusive proof of the truth of the old system. If, then, spoken words disturb a resisting force, we must admit that the cause of such wholesale destruction of voices as we see prevails amongst the multitudinous students who study must be owing to teachers appealing for results to chest *pressure* or false resistance, rather than to readjustment of *local*

resistance; for while speech disturbs, such tuition aggravates evil and destroys.

This philological fact was forced upon my perception by noticing that after a long day's work at teaching my voice "gave," and would not respond to my will. It was warped by its use with consonants. Now we know that new habits crowd out old ones; and although I had had from early March, 1860, to the middle of August, 1863, close study in Italy, still the new habit was not sufficiently strong, as it now is, to overcome the old one. Not until voice and the parts of speech become as isolated as an organist's feet are from his hands in playing can a person properly sing. When this fact is discerned and rightly applied by musicians, it will do more to organize a systematic course of vocal retraction from physical error than anything else I know. (See also p. 70.)

Testimony of use of False Cords.—Marcet, in a case of chronic inflammation, says, "I believe that the complete disappearance of the true vocal cords must not be considered as an indication that the voice cannot be recovered. In a very remarkable case of tubercular laryngitis I have had under my care, the voice was recovered, notwithstanding that the closest examination of the larynx (and the patient exhibited his throat admirably) failed to show the presence of the vocal cords. In this case the voice was entirely due to the action of the *false cords,* which had accommodated themselves to the patient's requirements, and become possessed of the power of vibrating, emitting a harsh and low, but not un-

pleasant sound, which could be well heard at a distance" (p. 27). I have a tenor pupil who can do this.

The objections to my explanation of right production are two: (1) No function has hitherto been assigned to the false cords and ventricles. I have assigned one;* it is for physiologists to assign another, or give another physical explanation. (2) It is objected the false cords are so feeble. Answer—"Atrophy." We should not draw conclusions of a blacksmith's arm from the attenuated arm of a ballet girl.

Some of the medical profession are evidently beginning to suspect that there is something in my theory.

"Disregarding, for a time, the vocal ligaments, let the aim be to ascertain the actual states of the false vocal cords during different breathing efforts, and during the emission of sounds musical or non-musical—anything, in fact, tending to determine for us what the differences in condition, what the variations in activity coincident with changes in position of other adjacent parts of the vocal apparatus. I do not intend by my suggestion to assume that the ventricles beneath the false vocal cords are

* The following extract affords a splendid and unintended corroboration of my discovery:

"In the howling monkeys of America there are several pouches opening from the larynx, which seem destined to increase the volume of tone that issues from it—one of these is excavated in the hyoid bone itself. Although these monkeys are of inconsiderable size, yet their voices are louder than the roaring of lions, and are distinctly audible at the distance of two miles; and when a number of them are congregated together, the effect is terrific."—*Carpenter's Phys.*

inflated during phonation (of course not with him), for my studies lead me to infer that the physical action is exactly the contrary of inflation; neither would I imply that the false vocal cords are approximated in the same way and to the same degree as are the true vocal ligaments when vibrating. But that the false vocal cords do change their position in varying degrees is not, I believe, disputed; and the points to be decided are, *how much do they approximate, from what causes, and for what end?* Merkel very plainly shows that changes do take place, that there is a position accompanying a low-pitched note, and a distinctly new position when the voice is singing in the higher range of pitch. For scientific value the investigation should be directed to ascertain specifically what the changes of this nature are when different notes are sung, and when the quality of tone is varied; also whether the changes are manifest in similar degree when tones of like pitch are produced by different individuals."—*Medical Press*, January 16th, 1884.

"It is stated that their function (ventricles) is to ensure complete inflation of the larynx during singing. . . . The pouches are thus rendered temporary air-reservoirs."—ARMAND SEMPLE, B.A., M.B., L.S.A., M.R.C.P., London.

Mr. Lennox Browne, as early as 1876, openly proclaimed, in his "Medical Science in Relation to the Voice as a Musical Instrument," his acceptance of my explanation: "I am well aware that I have left altogether untouched many points of great importance in *voice production*, as, for example, the

influence of the ventricles of the larynx in controlling both the entrance and exit of air in the glottis" (p. 12).

It is objected by physiologists that tigers, oxen, and other beasts, having loud voices, have neither false cords nor ventricles; but this objection tells in my favour. It is exactly because they have not these parts that their voices are unmusical, as it is the disuse of these parts in man that causes human voices to be unmusical and require training. The physical correlative to artistic voice is, therefore, as plain as A, B, C (frontispiece).

It has been advanced that the song of birds is inspiratory, but it is not so. The cuckoo's cry, the cat's purr, and the ass's bray are each the result of inspiration and expiration. Song birds all sing on expiration; the middle willow warbler will, perhaps, best show this to a casual observer. Thrushes have an individual as well as a specific character in their song.

APPENDIX.

It has been discovered that Galen, seventeen hundred years ago, proclaimed the same truths in natural physics as those for which I contend. He says: "But this body* of the glottis is not only *necessary to the organ of voice*, but also to what is called holding the breath, . . . to which action the nature of the aforesaid glottis contributes not a little, for to effect the said purpose the parts of it of the right and of the left approach, so as to fall together accurately, and close the passage. But should a small portion be left unclosed, not even this, as being unforeseen, has been disregarded by Nature, who has worked an opening on each side of the glottis, and placed in continuity with the aperture a cavity within by no means small. When, therefore, the air, making use of a wide channel, goes into the animal, and passes out again, none of it is turned aside into the cavity. When, however, the passage out is blocked, the air, being confined in a narrow space, is diverted forcibly towards the

* Galen considers the "body" which he calls glottis to consist of the vocal and ventricular bands of both sides, with the ventricles between them.

sides, and opens the mouth of the aperture of the glottis which hitherto has been closed by the folding together of the lips. The cavities in the glottis of the larynx being thus filled with wind, it is, of course, necessary that the swelling so produced should bulge towards the passage of the breath, and shut it with exactitude, even if a small part had previously been left open" (Oribasius, I., xxiv., c. 9).

The more advanced physiologists accept my rediscovery. In the August number of the *Voice* there is an article from the pen of Mr. Ephraim Cutter, A.M., M.D., LL.D., of New York, from which I extract the following: "It is worth recording as a *fact* that the false vocal cords or ventricular bands are the agents that hold in the breath, leaving the vocal cords to rest, and to engage in work at the will of the performer." And again, he showed by laryngoscopic demonstration the "appearance of my (his) larynx during the holding of the breath, and showing the *false* vocal cords forming a closed platform, which shuts the larynx tight enough to stop and hold the breath." That ends controversy, and shows that all those who differ from us are wrong.

But more: Goodeve, in his "Principles of Mechanics" (ch. ix.), shows that by opposing fluid pressure we obtain two different powers counterbalancing each other, so that an ordinary plunger pump can be made double instead of single acting, and by opposing pressures we obtain a balanced valve which can be opened by a small force (p. 267).

This is the natural law to which a student should be led.

The principle of a fluid ruled by a solid is shown in the following experiment, but in artistic voice the voiced air is guided by the inner walls: "Put a lighted candle behind a bottle, pickle-jar, or any other object having a polished surface, then station yourself at about twelve inches from the object, so that it hides the flame of the candle from you, and blow with your breath. The candle will be very easily extinguished, in consequence of the currents of air that you have created around the object meeting near the flame. With a board or a sheet of cardboard of the width of the bottle extinction would be impossible."—*Le Chercheur.*

THE END.

Baillière, Tindall & Cox, 20, King William Street, Strand.

OPINIONS OF THE PRESS ON THE FIRST, SECOND, AND THIRD EDITIONS.

"MR. LUNN'S third edition of his 'Philosophy of Voice' is more suited for educational purposes than the original volume, as he has excised much of the physiological portion. The author is evidently a thinker, and is careful and conscientious in developing his theories, which are, in many points, original. The subject of training is treated with ability by Mr. Lunn, and public speakers, as well as vocalists, will find his teachings of use."—*Athenæum.*

"Among 'thorough' musical reformers of the present day few are better entitled to a hearing than Mr. Charles Lunn; and it is with some feeling of pride that we look back on the many papers by him which have appeared in our columns—all conspicuous for conscientious heartiness, and an uncompromising advocacy of what the writer considers the truth. It is an honour to any community to possess a representative of so great a school; but when it is added that Mr. Lunn, by his own efforts, has collected the conflicting views held upon the voice, and claims to have evoked from the chaos of them a complete and perfect solution to every difficulty, Birmingham may well be proud of such a citizen."—*Orchestra.*

"Mr. Lunn is one of the most earnest and conscientious thinkers of the day, and has a right, not only to be heard, but to be answered. This work contains the result of many years' reflection; and as we can scarcely imagine that its writer publishes it for the sake of profit, his only reward can be in the consciousness of having fulfilled a duty by calling attention to an important branch of art which he believes to have been hitherto but imperfectly understood. Without following our author through his elaborate investigations, let us then urge those who are competent to grapple with the subject to give Mr. Lunn's book a calm and dispassionate consideration, even should his arguments run counter to convictions which the growth of years may seem to have rendered almost too sacred to disturb."—*Musical Times.*

"Mr. Lunn brings forward his views with great distinctness, and in a remarkably outspoken way."—*The Monthly Musical Record.*

"We need not say very much about this little work, inasmuch as it is reprinted from our own pages. Our readers, therefore, have been able already to form their opinion on Mr. Lunn's views, and enjoy his somewhat pungent criticism. He has very strong opinions on the subject which he has so profoundly studied, and he is desirous that voice-culture should be recognised as a branch of the medical rather than of the musical art. We regret as deeply as he can the follies of many speakers and singers, who ruin their voices, set up absolute disease in their throats, and give pain rather than pleasure to all cultivated listeners by their unnatural use of the voice. They come under medical treatment for restoration; but how seldom can they be brought to consider the propriety of prevention! . . . . We have read Mr. Lunn's work with great pleasure, and cordially commend it to the medical and musical professions."—*Medical Press and Circular.*

"The essay will be found very interesting to the medical profession, to the members of which it is dedicated, while every teacher of singing should carefully study it. If Mr. Lunn be right, some of the most popular teachers are wrong, and his arguments are sufficiently weighty to call forth their careful consideration. We have always looked upon the cultivation of the singing and speaking voice as largely comprised within the medical art, and we should be glad for the profession generally to pay more attention to it. We have therefore much pleasure in introducing Mr. Lunn's able essay to our readers."—*The Doctor.*

"We think that the author has proved his point. The little inconsistencies into which the author's warmth has led him are very minor blemishes in a book which not only seems most praiseworthy in its object, but highly philosophical in its general tone. In order that our readers may have a clear conception of the issues involved, it is necessary to premise that in comparing the human voice with other voices and other instruments, we have to sweep away *pretty nearly all* that belongs to *articulate* speech—certainly all the mechanism of labials, dentals, gutturals, and the like. We then have more or less pure tones to compare as to pitch and quality with other tones produced in other throats, or by other mechanisms. But this question of the register of the human voice, and the best methods of training this organ, is still further complicated by the artificial distinctions musicians have introduced into the nomenclature of voice and voice production. Those who wish to study the voice to help in elucidating this difficult question should have a thorough knowledge, not of music only, or of that and of anatomy and

physiology, but of natural philosophy, and of theoretical and applied mathematics also. It will thus be seen that the task is by no means an easy one."—*Student's Journal and Hospital Gazette.*

"We heartily wish Mr. Lunn every success in his efforts to improve the cultivation of the voice."—*Birmingham Medical Review.*

"Though small in size, the work is very important to members of the profession that makes its living by the human voice divine. . . . . We have no doubt that health and art would be both benefited by the adoption of the principles expounded. The author—who has clearly and logically enunciated his theory—deserves success."—*Pictorial World.*

"This little work is a reprint from a series of well-written essays which appeared in the *Medical Press and Circular.* . . . . . Mr. Lunn, after pointing out various fallacies, proceeds to give us his method of voice-training, which we should advise everyone interested in this important subject to study for themselves."—*Public Opinion.*

"Teachers of singing may derive much scientific information from this pamphlet."—*Graphic.*

"An elaborate and exhaustive treatise on the human voice and the opinions of the author as to the best way to cultivate and maintain it. . . . Mr. Lunn is evidently, though a determined reformer, no fanatic, and no mere advertising adventurer. He thoroughly believes in the truth of all he writes, and decidedly has his subject at his fingers' ends. Neither is the work a mere copy of former productions; but, on the contrary, it shows an originality of thought and a novelty of ideas which entitle it, at least, to thoughtful consideration. To all who are interested in the subject the 'Philosophy of the Voice' may be confidently recommended, and, whether the various deductions are found true or not, the shilling *brochure* is eminently readable, and decidedly interesting. It is idle to attempt to suppress a novel theory because it is new, or to treat it with contempt because it is by existing authorities held to be unsound. When a man argues by sheer force of logic and authority he makes out a *primâ facie* case, and is entitled to be heard."—*Figaro.*

"Mr. Lunn, who is well known as an able writer on musical subjects, holds that voice-culture belongs rather to the surgical than the musical art, and his views on this subject are here set forth with great clearness and ability."—*The Rock.*

"For those who are competent to follow the reasoning of this really profound little book there will be enjoyment as well as improvement, and certainly the learning of new things. Mr. Lunn has treated his subject, not superficially, but with evident study; and we commend it to all who wish to 'sing philosophically'—a luxury which is denied to the many."—*The Tablet.*

"Mr. Lunn has brought to his work a vast fund of carefully discriminating knowledge, a practical acquaintance with all the branches of his subject, and a method of reasoning at once lucid and forcible, and for the greater part unanswerable. We gladly commend the work to all who value the proper development of their voices."—*Catholic Times.*

"The author explains the differences that are found between the statements of musicians and physiologists, and argues that voice-culture to be in its true position should be regarded as a branch of surgical rather than as a branch of musical art."—*Oxford University Herald.*

"The subject is one of great interest to future orators and clergymen, especially the latter, who, by the continuous strain on the vocal organs, wrongly effected, are subject to a disease commonly spoken of as a 'clergyman's throat.' To singers also the book recommends itself very strongly, and it should be in the hands of those to whom is committed the task of training the voices of our future clergymen, public orators, and public or private vocalists."—*Oxford Times.*

"Mr. Lunn thoroughly understands the subject upon which he writes."—*Oxford Chronicle.*

"The work is admirably written, and well worthy of attention."—*Cambridge Express.*

"This remarkable little book reproduces in a handy form some papers which the author originally contributed, not to a musical publication, but to the *Medical Press and Circular.* This, however, was a medium appropriate enough. Mr. Lunn's view was to explain the differences between the statements of musicians and physiologists, and his aim 'to place voice-culture in its true position as a branch of surgical rather than as a branch of musical art.' The first object he has attained admirably in the work before us, the perusal of which will well repay the medical man, the rising orator, or the intelligent vocalist; the second has yet to be achieved."—*Birmingham Daily Gazette.*

"A book that has the merit of being both original and interesting."—*Birmingham Morning News.*

"Mr. Lunn has evidently deeply studied the subject, and we strongly recommend his little book to all who are preparing for the pulpit, the senate, the bar, the stage, or the concert-room."—*Jackson's Oxford Journal.*

"We are not sure that we can accept all Mr. Lunn's teachings in their entirety, though we greatly admire the earnestness of purpose with which he has set himself to the task of a musical reformer, and the ability he has displayed in so doing. There is undoubtedly much truth in what he has advanced, and all who are interested, either theoretically or practically, in voice-culture, would do well to give his little volume a careful perusal. In his recommendation that it should form the subject of special instruction we heartily concur, believing that if this were done, good voices, whether heard on the orchestra, in the pulpit, or on the platform, would be the rule, instead of, as it is now, the exception."—*Leeds Mercury.*

"This is a remarkable essay on a popular subject. It is remarkable in many respects, but chiefly because, enthusiast as Mr. Charles Lunn the author is, he never allows his enthusiasm to mar or interfere with his logic."—*Malvern Advertiser.*

"This work, though a small one, is a masterpiece, and could be written only by one who had studied the subject in all its aspects."—*Malvern News.*

"Mr. Lunn has published an able, exhaustive, critical treatise on an important and interesting subject. Proper voice production is, in these pages, well considered from a physiological as well as an artistic point of view; the theories of writers and so-called 'authorities' upon the subject of the voice are critically considered, and a large amount of curious and valuable information is given to the reader. Mr. Lunn speaks out in no uncertain voice. He states opinions openly and fearlessly, and does not hesitate boldly to denounce those with whom he disagrees, or scruple to decry the many antiquated and erroneous theories which have been set up. All interested in the voice and singing should peruse the 'Philosophy of Voice.'"—*Midland Counties Herald.*

"Mr. Lunn's work will be of incalculable use to physiological lecturers on the voice, and is couched in intelligible language, devoid of technicality, and free from any looseness of expression."—*Public Opinion* (2nd notice).

OPINIONS OF THE PRESS ON THE FIFTH EDITION.

"This is a high-class work on the physiology, philosophy, and education of the voice for song and speech. Public speakers, whether preachers or lecturers, and public performers, actors and vocalists alike, will find this volume quite a boon. They all ought to be familiar with its wise, luminous, and practical pages. It is beautifully got up, strikingly illustrated, and costs but half-a-crown. It cannot be too widely known among speakers and singers."—*Oldham Chronicle*, September 25th, 1886.

"The sub-title of this excellent and concisely-written treatise, 'Showing the Right and Wrong Action of Voice in Speech and Song, with Laws for Self-culture,' sufficiently indicates its character and purpose. Mr. Lunn is authoritative and daring, but he acts, we believe, on the well-worn maxim—be sure you are right, and then go ahead. To a vast number of readers this little book will be a revelation, full of surprise and rebukes, and yet, rightly read, abounding in hope even for those who have made up their minds that, in their voices at all events, there are no potentialities of excellence. Beginning with the voice organs of birds, Mr. Lunn goes thoroughly into the science of the human voice, and, by the aid of perfectly intelligible diagrams and a most popular style of explanation, actually brings the phonetic mechanism of the voice within the full understanding of everyone who can read. While ever most mindful, as may be inferred, of the physical, Mr. Lunn does not fail to take into full account the emotional and spiritual phases of life, and suggests at least how the better culture of our vocal powers would conduce to the evolution of a higher character. We have read this treatise with much interest, and most certainly all may profit by its pages, and especially singers, of whom, as the writer demonstrates, many ruin their natural powers by using their voice in an unnatural way. All public speakers, too, and, for the matter of that, most people may profitably consult Mr. Lunn; for if there be one thing more than another that needs true and patient culture in this country it is the human voice, and that not simply

for song or declamation, but for the intercourse of ordinary life, where a truly cultured and flexible tone constitutes a charm far beyond that of mere physical beauty, and adds greatly to the pleasures of mutual intercourse."—*Public Opinion.*

"The views which Mr. Lunn upholds are original, and he has devoted exceptional powers and gifts to the working out of his theories. We recognise enthusiasm, earnestness, care, vigour, and directness of expression, and the results of practical experience in the production."—*Birmingham Daily Post*, August 18th, 1886.

"We heartily advise all to whom it is more especially addressed to secure a copy of this useful little manual."—*Dart*, July 16th, 1886.

"A complete manual of voice production, scientific in its arrangement and original in its theory. There is no one interested in the human voice who will regret the time spent in studying this scientific but eminently practical little book."—*Pictorial World*, August 5th, 1886.

"This is a revised edition of a book of established reputation."—*Kentish Mercury*, August 6th, 1886.

"There is a great abundance of learning and variety in these pages."—*Metropolitan*, August 14th, 1886.

"The ingenious theories about the analogy of the human vocalization to that of ornithological species, and his lucid explanations of many of the physical phenomena in connection with voice production will be perused with interest and advantage."—*Queen*, September 4th, 1886.

"Numerous rules are laid down for self-culture which will enable the student to overcome many of the physiological difficulties connected with speaking and singing."—*Bookseller*, September 4th, 1886.

"An admirable little book, setting forth the whole theory of the production and cultivation of the voice in a clear and comprehensive way. Whether we agree with the 'old methods' of training the voice or the new, it is evident that Mr. Lunn has devoted a large amount of care and thought to his work. He is an eminent teacher at Birmingham, and the best test of his method lies in the amount of success attained by his pupils."—*Christian*, July 22nd, 1886.

"One of the first things necessary in presenting a subject is for the person who presents it to understand it himself. This Mr. Lunn evidently does. He seems to be thoroughly acquainted with the voice, and most of his information has

evidently been received not at secondhand, but by careful personal observation and experience. His book is, at any rate, a valuable contribution to a much neglected subject."—*Christian Commonwealth*, August 5th, 1886.

"This valuable work is a welcome to the literature appertaining to music. The culture of the voice for speaking and singing purposes is most important."—*Catholic Times*, July 16th, 1886.

"Mr. Lunn's work has now reached its fifth edition, which is in itself a token of success."—*Musical Standard.*

"On more than one occasion in times past we have embraced the opportunity afforded by the publication of one or other of his works, or of new editions of them, to commend Mr. Lunn's earnestness and ability. We congratulate him upon the appearance of the fifth edition of this book, and recommend those of our readers who are interested in the subject of voice-cultivation to make acquaintance with it. There are hints which even the most experienced may take with profit, and there are many physiological truths which are of inestimable value, showing that the author has most carefully studied his subject, and may claim to be scientific in the basis of his principle. In the educational part he explains the peculiarity of the old Italian method of singing. He gives a series of laws for voice production, described in words which are replete with shrewdness and common-sense. They are also plain and lucid, and well calculated to fulfil that portion of the purpose of the book which aims at self-culture. The first part of the book shows how the most may be made of the voice as it exists; the second part deals with the acquisition of technique, or how the voice-possessor may become an artist. This must be read and studied, as every page is distinguished by points of the utmost value to those who would know the science of their art, and benefit by the result of a long course of experience on the part of the writer. Mr. Lunn may be commended for having had the courage to express his views boldly and firmly. He will find many who have strong sympathies with him; and though he may be almost alone in some of his utterances, he is not alone in his sentiments, and as these are based upon truth and reason, his disciples must increase. Those who are supporters of the 'hand-to-mouth' system of teaching singing and training voices ought not to read the book, unless they are minded to enter upon a course of reform. They will find much to condemn in themselves, and this may not be pleasant to them. Those who are willing to believe that a man who is vigorous in expression, and pos-

sessing full knowledge of his theme does not hesitate to declare his views, ought to command attention, will read and profit by the statement of facts contained in 'The Philosophy of Voice' as enunciated by Mr. Charles Lunn."—*The Monthly Musical Record*, September 1st, 1886.

"The author is a practical musician and an apt, scholarly, and fascinating teacher. All who have to use their voices in public, whether in the mutual improvement society, or on the platform, or at the desk, ought to get, peruse, and act on the excellent instructions of this work, which has already run through five editions."—*News and Advertiser*, October 9th, 1886.

"Those who wish to know should make a study of this little book before us."—*Midland Counties Herald*, October 7th, 1886.

"This book is of immense interest to those who study the means of voice production. Mr. Lunn's work is certain to be highly appreciated by a large circle, as the earnest effort of an artistic nature, seeking light in a region where, until lately, a remarkably thick darkness prevailed."—*Bazaar*, September 29th, 1886.

"The reader will be rewarded in the perusal of the body of the work itself, since it is written with thorough knowledge of the subject, and in a style that admits of no contradiction. The philosophical bearings of the subject are treated at some length and with considerable skill and clearness. The frontispiece presents to view, not a diagram of the laryngoscope, like most of the books on the same subject, but an outline of the sedge-warbler, intended to serve as an example of voice production to the singing birds that have no wings. The book is thoroughly interesting throughout; and not the least agreeable part of it is the author's refreshing love of nature, which comes out in many passages, as it is foreshadowed in the frontispiece that we have already mentioned."—*The Musical World*, July 17th, 1886.

"Teachers of singing, public speakers, and all who have to use the voice to any extent in public, will derive great benefit from a careful perusal of this excellent work."—*Christian World*, October 28th, 1886.

"There are so many teachers who do little else than spoil nature's handiwork, that the public need some defenders of Mr. Lunn's type, and ought to support them when found."—*Church Times*, November 19th, 1886.

"This is a very able, scholarly, and practically important work, useful alike to singers and speakers, especially

lecturers, preachers, and vocalists. The volume is written in a most charming style, and the author is conferring a real favour on his fellow-countrymen by its publication."—*Oldham Chronicle*, November 20th, 1886.

"This is one of the best of the many works on the nature and culture of the human voice. His work is both authoritative and instructive."—*Brighouse Gazette*, December 18th, 1886.

"Voice production as a science (in this country at least) has been heard of during the last quarter of a century only; and Mr. Lunn himself may be honestly credited with being one of the first, if not the very first, to insist upon the importance of the subject and to write about it philosophically."—*Birmingham Gazette*, November 26th, 1886.

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